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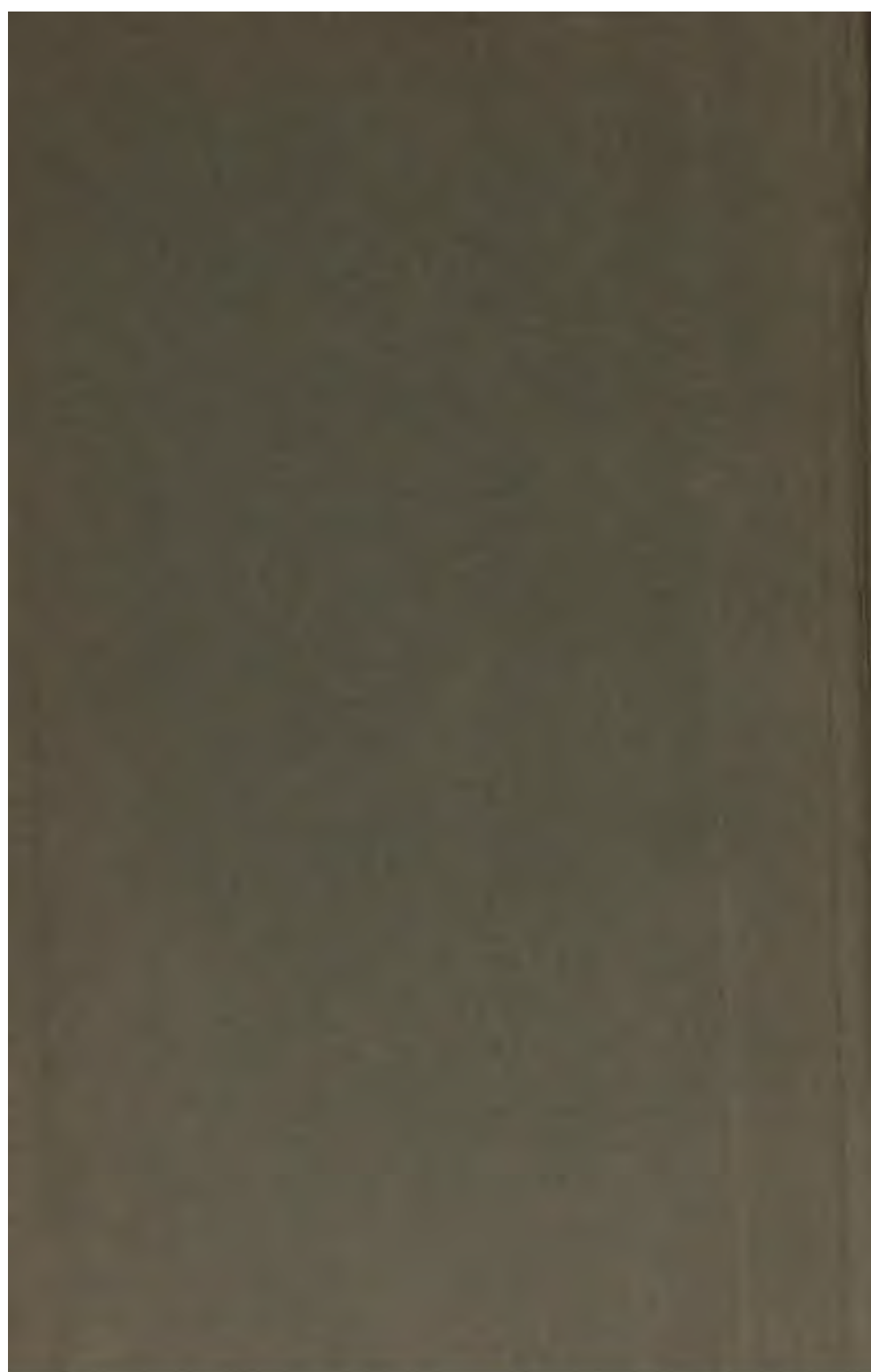
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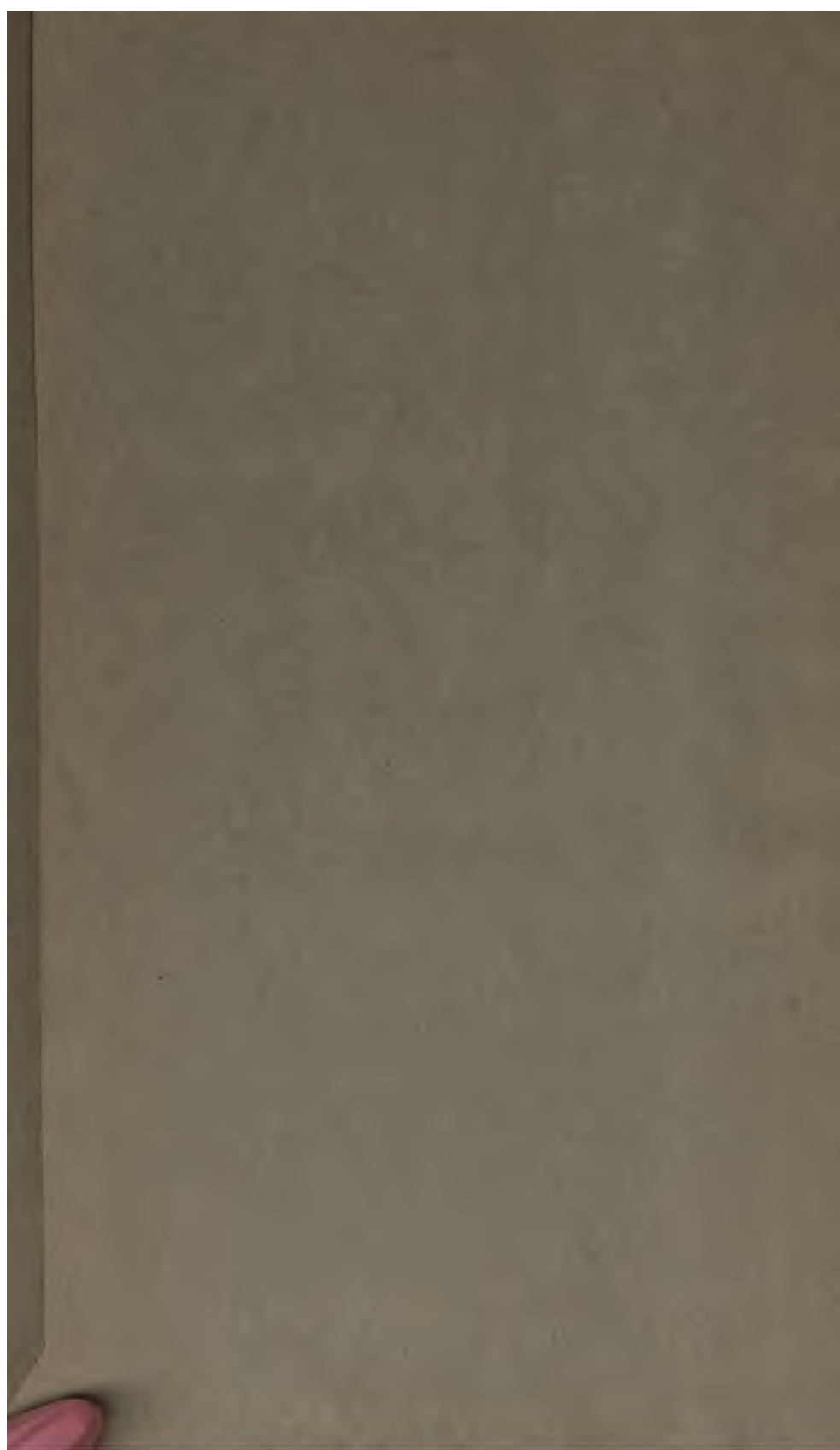
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Great Britain



THE
NAUTICAL ALMANAC
AND
ASTRONOMICAL EPHEMERIS
FOR THE YEAR
1837.

WITH AN APPENDIX.

PUBLISHED BY ORDER OF
THE LORDS COMMISSIONERS OF THE ADMIRALTY.



London:

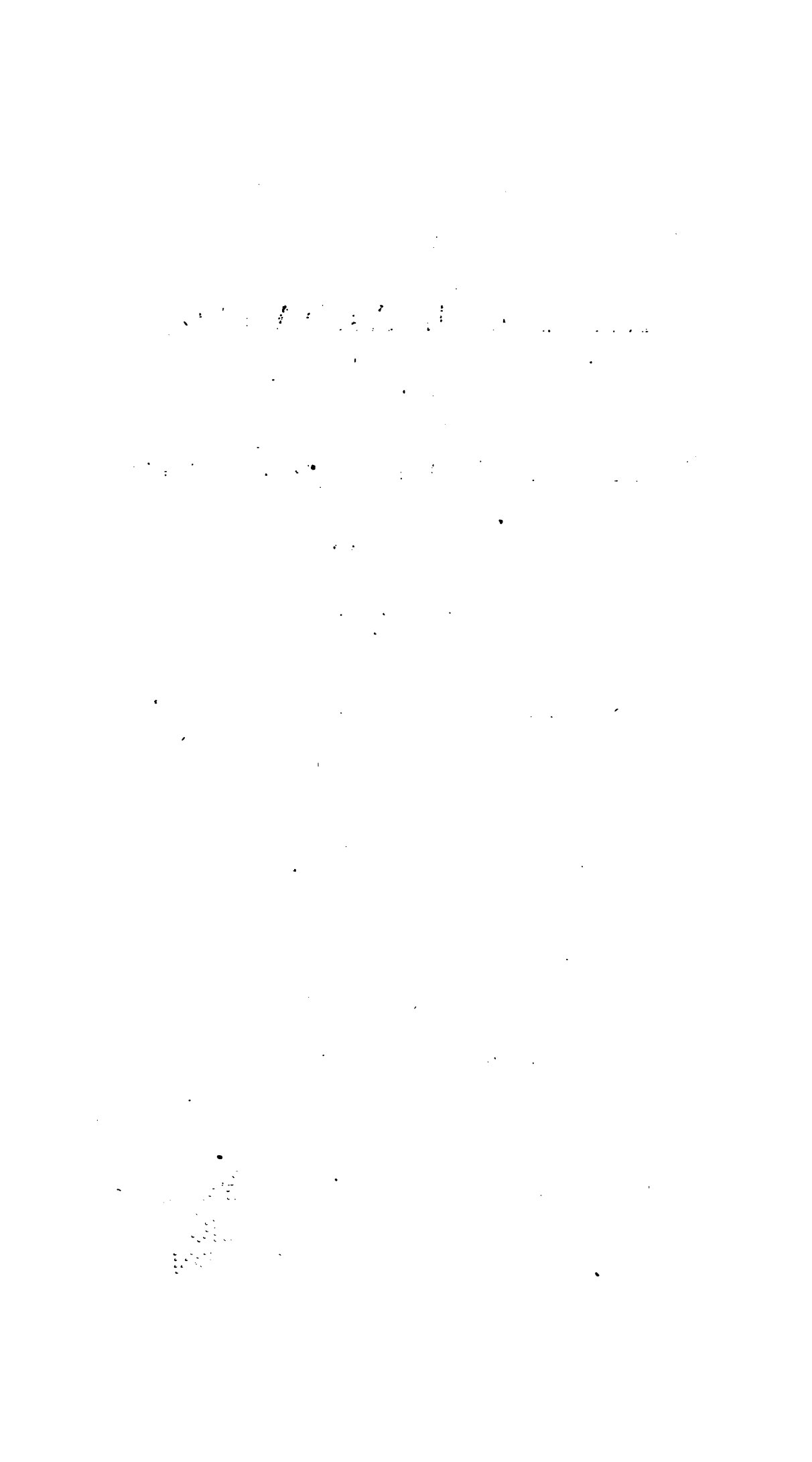
PRINTED BY WILLIAM CLOWES AND SONS, STAMFORD-STREET;

AND SOLD BY

JOHN MURRAY, ALBEMARLE-ST.

1835.

PRICE FIVE SHILLINGS



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the small, the Page of the Preface; and the Arabic, the Page of the Book.

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P R E F A C E.

THE NAUTICAL ALMANAC and ASTRONOMICAL EPHEMERIS for the year 1837 has been constructed upon the same plan as those of the preceding years, commencing with the year 1834.

THE Sun's Longitude from the *Mean* Equinox, the Latitude, and the Earth's Radius Vector have been deduced from the New Tables appended to *Effemeridi Astronomiche di Milano per l'Anno 1833*, (Milano, 1832), using a difference of Meridians $\equiv 36^m 45^s$.

The Perturbations of Longitude, Latitude, and Radius Vector produced by each of the Planets, Venus, Mars, Jupiter, and Saturn, have been computed accurately from the Tables for every 10th day of the year; the Sums then interpolated for every 5th day, using the Equation for second differences; and thence the daily perturbations by simple proportion. The other parts of the calculations have been performed for each day.

The Mean Obliquity of the Ecliptic has been taken $\equiv 23^\circ 27' 37''.89$, on January 1, 1837, and the Mean Annual diminution $\equiv 0''.457$. (BESSEL's *Tab. Reg.* page 9.)

The Nutations of the Obliquity of the Ecliptic ($\Delta \omega$) and of Longitude (ΔL), have been derived from MS. Tables constructed according to the following formulæ:

$$\Delta \omega = 9''.2500 \cos \Omega - 0''.0903 \cos 2 \Omega + 0''.0900 \cos 2 \mathfrak{D} + 0''.5447 \cos 2 \odot$$

$$\Delta L = -17''.2985 \sin \Omega + 0''.2082 \sin 2 \Omega - 0''.2074 \sin 2 \mathfrak{D} - 1''.2550 \sin 2 \odot$$

where Ω is the Mean Longitude of the Moon's ascending Node, \mathfrak{D} the true Longitude of the Moon, and \odot the true Longitude of the Sun. (*Ast. Soc. Cat.*, pages xiv and xv.)

The Semidiameter of the Sun, at the Earth's Mean Distance, has been taken $\equiv 16' 0''.9$, as determined by BESSEL from 1698 transits, in which both limbs had been observed at Königsberg, between the Years 1820 and 1828, with REICHENBACH's meridian circle. (BESSEL's *Tab. Reg.* page L.)

The Equatorial Horizontal Parallax of the Sun, at the Earth's Mean Distance, has been taken $\equiv 8''.5776$, as deduced by PROCKE, from the Transits of Venus, &c. Gotha, 1824. page 108.)

The Constant of Aberration $\equiv 20''.34$

(*Ast. Soc. Cat.* page x.)

The Sidereal Time at Mean N

$\frac{\text{Longitude} + \text{Nutation}}{15}$

According to PROCKE, from the Transits of Venus, &c. Gotha, 1824. page 108.)

XIV), the Mean Longitude of the Sun, at Paris Meridian, for the year 1800 + t , is

$$279^\circ 54' 1''$$

$$21805 - f. 14' 47''.083$$

where f denotes,

years from the preceding bis-

sextile year. Assuming the Meridian of Greenwich to be $9^m 21^s.5$ West of that of Paris, and altering the epoch to the Mean Noon of January 1 of the year $1800 + t$, the Sun's Mean Longitude (M) for the meridian of Greenwich is hence found equal to

$$280^\circ 53' 32''.75 + t.27''.605844 + t^2.0''.0001221805 - f.14' 47''.083,$$

and we have, for the Mean Noon of any day (n) of the year $1800 + t$;

$$\text{Sidereal Time} = \frac{M}{15} + n.3^m 56^s.555348 + \text{Nutation in R. A.}$$

The Places of the Moon, from the Mean Equinox, have been derived from BURCKHARDT's *Tables de la Lune* (Paris, 1812), using a difference of Meridians $= 9^m 21^s$: They have been computed independently and in duplicate for every Mean Noon and Midnight of the Year; and second differences have been taken into account wherever the irregular variation of the Equations rendered such a correction appreciable.

The Calculations relating to the Planets, for the year 1837, have been performed by the Nautical Almanac Computers, with the exception only of the Geocentric Places of the Minor Planets, which were supplied by Professor ENCKE.

The Places of Mercury, Venus, and Mars, from the Mean Equinox, have been derived from LINDENAU's *Tables**, assuming Greenwich to be $42^m 56^s$ West of Seeberg; and those of Jupiter, Saturn, and the Georgian, from BOUVARD's new *Tables*,† with a difference of meridians $= 9^m 21^s.5$.

For Mercury, the Perturbations were obtained immediately from the *Tables* for each alternate day and interpolated with first differences: the remainder of the calculations were performed for every day.

For Venus, the Perturbations obtained from the *Tables* for every eighth day, were interpolated with second differences for each alternate day. The Heliocentric places were then computed for each alternate day, and interpolated with second differences. The Geocentric places were computed for every fourth day, and the intermediate days obtained by interpolating with fourth differences.

For Mars, the Perturbations obtained from the *Tables* for every sixth day, were interpolated with second differences for every third day. The Heliocentric places were computed for every third day, and the intermediate days obtained by interpo-

* *Investigatio nova Orbitæ a Mercurio circa Solem descriptæ, accedunt Tabulæ Planetæ ex Elementis recens repertis et Theoria Gravitatis Illust. De Laplace constructæ. Auctore BERNHARDO DE LINDENAU. Gothæ, 1813. 4to.*

Tabulæ Veneris novæ et correctæ ex Theoria Gravitatis clarissimi De Laplace et ex Observationibus recentissimis in specula Astronomica Seebergensi habitis erutæ. Auctore BERNHARDO DE LINDENAU. Gothæ, 1810. 4to.

Tabulæ Martis novæ et correctæ ex Theoria Gravitatis clarissimi De Laplace et ex Observationibus recentissimis erutæ. Auctore BERNHARDO DE LINDENAU. Eisenberg, 1811. 4to.

† *Tables Astronomiques publiées par le Bureau des Longitudes de France, contenant les Tables de Jupiter, de Saturne et d'Uranus, construites d'après la Théorie de la Mécanique Céleste; par M. A. BOUVARD. Paris, 1821. 4to.*

PREFACE.

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lating with second differences. The Geocentric places were obtained by interpolating, with fourth differences, the places computed for every fourth day.

For Jupiter, the Heliocentric places were obtained by interpolating the places computed for every twenty-fourth day directly from the Tables, using second differences. The Geocentric places were then computed for every sixth day, and interpolated, for each day, with differences to the fourth order.

For Saturn and the Georgian, the Heliocentric places were computed directly from the Tables at intervals of thirty days, and interpolated, for each day, with second differences. The Geocentric places were obtained independently for every sixth day, and interpolated for every day, using differences to the fourth order.

The Ephemerides of the minor Planets have been deduced from the following Elements of their orbits, furnished by Professor ENCKE:

I. VESTA.

Epoch, 1837, Sept. 4, 0^h Mean Time at Berlin.

Mean Longitude of ☿	- - - - -	331° 38' 55".9	} From Mean Equinox of Sept. 4, 1837.
Longitude of the Perihelion	- - - - -	250 29 48.2	
Longitude of Ascending Node	- - - - -	103 22 8.8	
Inclination of the Orbit	- - - - -	7 8.14.0	
Excentricity	- - - - -	sin 5 3 29.0	
Mean daily Sidereal Motion	- - - - -	977".49464	

8 1837, Sept. 3, 20^h 5^m 14^s Mean Time at Berlin.

II. JUNO.

Epoch, 1837, April 14, 0^h Mean Time at Berlin.

Mean Longitude of ♃	- - - - -	187° 32' 15".7	} From Mean Equinox of Apr. 14, 1837.
Longitude of the Perihelion	- - - - -	54 19 31.4	
Longitude of Ascending Node	- - - - -	170 54 8.7	
Inclination of the Orbit	- - - - -	13 2 39.5	
Excentricity	- - - - -	sin 14 53 3.9	
Mean daily Sidereal Motion	- - - - -	814".44284	

8 1837, April 13, 20^h 9^m 42^s Mean Time at Berlin.

III. PALLAS.

Epoch, 1837, Oct. 14, 0^h Mean Time at Berlin.

Mean Longitude of ♃	- - - - -	55° 50' 50".2	} From Mean Equinox of Oct. 14, 1837.
Longitude of the Perihelion	- - - - -	121 42 51.7	
Longitude of Ascending Node	- - - - -	172 38 5.5	
Inclination of the Orbit	- - - - -	34 38 29.7	
Excentricity	- - - - -	sin 13 49 56.8	
Mean daily Sidereal Motion	- - - - -	768".54528	

8 1837, Oct. 17, 3^h 16^m 13^s Mean Time at

IV. CERES.

Epoch, 1837, Dec. 9, 12^h Mean Time at Berlin.

Mean Longitude of ζ	- - - - -	86° 11' 37".5	} From Mean Equinox of Dec. 9, 1837.
Longitude of the Perihelion	- - - - -	149 56 48.2	
Longitude of Ascending Node	- - - - -	80 46 57.6	
Inclination of the Orbit	- - - - -	10 36 47.9	
Excentricity	- - - - -	sin 4 31 37.1	
Mean daily Sidereal Motion	- - - - -	771".32342	

8 1837, Dec. 9, 13^h 3^m 8^s Mean Time at Berlin.

The Semidiameters of the Planets, for the Mean Distance of the Earth from the Sun, have been adopted as follow :

Mercury, Eq. Sem.	3".23	(Lindenau's <i>Tables of Mercury</i> , page 38)
Venus, Eq. Sem.	8".25	(Delambre's <i>Astronomy</i> , vol. ii. page 620)
Mars, Eq. Sem.	4".435	(Littrow's <i>Astronomy</i> , vol. ii. page 389)
Jupiter, Eq. Sem.	99".704	(<i>Mem. Ast. Soc.</i> , vol. iii. page 301)
Saturn, Eq. Sem.	81".106	(<i>Ast. Nach.</i> N° 189)
Georgian, Eq. Sem.	37".25	(Delambre's <i>Astronomy</i> , vol. ii. page 620)

The Eclipses of Jupiter's Satellites have been computed in duplicate, from DELAMBRE'S *Tables Ecliptiques des Satellites de Jupiter, d'après la Théorie de M. le Marquis DE LA PLACE et la totalité des Observations faites depuis 1662 jusqu'à l'an 1802* (Paris, 1817), using the corrected Epochs given in the NAUTICAL ALMANAC for the Year 1832, and a difference of Meridians = 9^m 21^s.

For the Configurations and Occultations of the Satellites, as well as the Transits of the Satellites and their Shadows over the disc of the Planet, Mr. WOOLHOUSE'S Tables in the APPENDIX to the NAUTICAL ALMANAC for 1835 have been used.

The Mean Places of the 100 Principal Fixed Stars for Jan. 1, 1837, together with the Annual Variations, have been derived from the fundamental Catalogue for 1830, contained in the *Second Edition* of the NAUTICAL ALMANAC for 1834, pages 362 to 367, by means of the Formulæ at page xiv of the PREFACE to that Volume.

The Logarithms of A, B, C, D, at page XXII. of each Month, have been computed agreeably to the Formulæ at page 365, omitting only in the Values of C and D, the terms $-0.004 \sin 2\zeta$ and $-0''.090 \cos 2\zeta$; and for the only Stars that can be sensibly affected by the omission, viz. the five Polar Stars, a Table of Corrections is given at pages 408 and 409.

The Table of Constants for facilitating the Reduction of Stars generally, has been computed from BESSEL'S Formulæ, given at page 365, using the A, B, C, D, contained in this volume.

The apparent places of 95 of the principal Stars have been deduced from the Mean Places for January 1, 1837, using the Variables A, B, C, D in the present volume with new constants computed for the year 1840, instead of the constants in the Astronomical Society's Catalogue for 1830. For the five Polar Stars the constants have been computed for 1837 and 1838, and interpolated. The corrections were computed

independently for every tenth day, with the exception of those for α and δ URSAE MINORIS, which were interpolated, with second differences, from computations made for every third day of the year.

A further correction of the right ascension for *daily* aberration is necessary, where extreme accuracy is required, and may be computed as follows: Let ϕ denote the latitude of the place, and δ the declination of the Star, then the correction (*in time*) for the *upper* transit is,

$$+ 0^{\circ}0206 \cos \phi \sec \delta$$

and for the *lower* transit,

$$- 0^{\circ}0206 \cos \phi \sec \delta$$

The Lists of Moon-Culminating Stars and Occultations have been selected from MR. FRANCIS BAILY'S Catalogue of Zodiacal Stars. (London, 1827.)

The Mean Places of the Stars for both Lists were taken in order of preference, 1. From the Catalogue of the 100 Stars in this Work. 2. From Mr. POND'S printed Catalogue of 1112 Stars. 3. From the Astronomical Society's Catalogue. The reduction of the Mean to the Apparent Places has been performed by means of the Astronomical Society's Constants; the corrections for each star on the contiguous days being obtained by different computers for the Moon-Culminating List, and those for the Occultations by duplicate computations.

The calculations of the Elements of Occultations, as well as the Occultations, have been made in duplicate, and the Solar and Lunar Eclipses in the manner described by Mr. WOOLHOUSE in the Appendix to the NAUTICAL ALMANAC for 1836.

The Elements at page 472, for determining the appearance of Saturn's Ring, have been calculated by means of the formulæ at page viii of the NAUTICAL ALMANAC for 1836.

The Stars for the Ephemeris of Mars near Opposition in 1837, were selected by PROFESSOR HENDERSON of the Edinburgh Observatory.

The Tides at London Bridge for the year 1837 have been computed from MS. Tables founded upon Mr. LUBBOCK'S principal Table III, given at page 401 of the *Philosophical Transactions* for 1831. This Table, as well as Table XV at page 412, which contains the corrections for each Month, has been entirely reconstructed, by adapting the equations for each month to their proper argument, *apparent time*, and eliminating from the latter the corrections due to the Moon's Declination and Parallax. From a comparison which has been made of the Tides given in the Second Edition of the Nautical Almanac for 1834, which were also deduced from corrected Tables, with the observed Tides at the London Docks, it appears the observations are still very imperfectly represented by the Tables.

The Tables for finding the Latitude of a place by O (α URSAE MINORIS), at any hour of the day, are similar to PROFESSOR SCHUMACHER in his Ephemeris of the Planetar on the following formula:

$$l = a - p \cos h + \frac{1}{2} \sin 1'' (p \sin h)$$

where l denotes the latitude

a — the true altitude of the Star

p — the apparent polar distance, expressed in seconds of arc

h — the hour angle of the Star $= S - \alpha$; S being the sidereal time of observation, and α the right ascension of the Star.

Table I contains the value of the *second* term ($p \cos h$) or the *first correction*; assuming, as *mean* values, $p = 93' 6''$, and $\alpha = 15^\circ 27'$.

Table II contains the value of the *third* term ($\frac{1}{2} \sin 1'' (p \sin h)^2 \tan a$) or the *second correction*, using the same *mean* quantities as in Table I.

Table III, which is *special* for the year 1837, and depends upon the difference between the true and assumed values of p and α , contains the *third* correction increased by $1'$ for the purpose of rendering the quantities additive.

A fourth term ($-\frac{1}{2} \sin^2 1'' (p \cos h) (p \sin h)^2$) is omitted, its greatest value being only $0'' \cdot 55$.

In the construction of this Ephemeris, duplicate computations have been made where necessary, and in every instance some independent calculations have been performed to guard against errors in principle, and the results finally examined by means of differences.

The Appendix (the paging of which has been continued from that of 1836, with a view to the formation of a separate volume hereafter) contains a paper by Professor AIRY, "*On the Calculation of the Perturbations of the Small Planets and the Comets of Short Period,*" and a paper by Mr. WOOLHOUSE, "*On the Determination of the Longitude from an Observed Solar Eclipse or Occultation.*"

Nautical Almanac Office, Somerset House,
May 22, 1835.

W. S. STRATFORD, Lieut. R.N.,
Superintendent of the Nautical Almanac.

* * * The Nautical Almanac for 1838 will be published in December next.

TO KONTAKA 1928 PRINCIPAL ARTICLES OF THE CALENDAR,

For the Year 1837.

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Solar Cycle - - - - -	26	Julian Period - - - - -	6550

FIXED AND MOVEABLE FESTIVALS, ANNIVERSARIES, &c., &c.

Epiphany - - - - -	Jan. 6	Pentecost—Whit Sunday - -	May 14
Septuagesima Sunday - - - -	22	Trinity Sunday - - - - -	21
Martyrdom of K. Charles I. - -	30	Corpus Christi - - - - -	25
Quinquagesima—Shrove Sund. Feb.	5	Restoration of K. Charles II. -	29
Ash Wednesday - - - - -	8	St. John Bapt.—Midsm' Day	June 24
Quadragesima—1st Sunday in Lent	12	Accession of K. William IV. -	26
St. David - - - - -	Mar. 1	Proclamation - - - - -	28
St. Patrick - - - - -	17	Birth of Q. Adelaide - - -	Aug. 13
Palm Sunday - - - - -	19	Birth of K. W. IV.* - - -	21
Good Friday - - - - -	24	Coronation of K. W. IV. -	Sept. 8
Annunciation—Lady Day - - -	25	St. Michael—Michaelmas Day -	29
EASTER SUNDAY - - - - -	26	Gunpowder Plot - - - -	Nov. 5
Low Sunday - - - - -	Apr. 2	St. Andrew - - - - -	30
St. George - - - - -	23	1st Sunday in Advent - - -	Dec. 3
Rogation Sunday - - - - -	30	St. Thomas - - - - -	21
Ascension Day—Holy Thursday	May 4	Christmas Day - - - - -	25

* Kept May 28.

The Year 5598 of the Jewish I

nces on September 30, 1837.

The Year 1253 of the Moham

ommences on April 7, 1837.

Ramadân (Month of Abstin

the Turks) commences on

November 29, 1837.

1837

EPHEMERIS

FOR THE YEAR

1837,

FOR THE MERIDIAN

OF THE

ROYAL OBSERVATORY AT GREENWICH.

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Sun.	1	18 47 39·96	11·037	S.23 0 36·0	13·15	1 10·98	3 56·77	1·178
Mon.	2	18 52 4·84	11·023	22 55 20·4	14·29	1 10·93	4 25·03	1·163
Tues.	3	18 56 29·39	11·006	22 49 37·5	15·43	1 10·88	4 52·94	1·146
Wed.	4	19 0 53·54	10·990	22 43 27·2	16·55	1 10·82	5 20·45	1·130
Thur.	5	19 5 17·30	10·971	22 36 49·9	17·68	1 10·76	5 47·57	1·111
Frid.	6	19 9 40·60	10·951	22 29 45·7	18·79	1 10·70	6 14·24	1·091
Sat.	7	19 14 3·43	10·930	22 22 14·8	19·89	1 10·64	6 40·42	1·070
Sun.	8	19 18 25·74	10·907	22 14 17·5	20·98	1 10·57	7 6·11	1·048
Mon.	9	19 22 47·51	10·883	22 5 54·0	22·06	1 10·50	7 31·25	1·024
Tues.	10	19 27 8·71	10·858	21 57 4·5	23·13	1 10·42	7 55·82	1·000
Wed.	11	19 31 29·31	10·833	21 47 49·4	24·19	1 10·34	8 19·81	0·973
Thur.	12	19 35 49·29	10·806	21 38 8·8	25·24	1 10·26	8 43·17	0·947
Frid.	13	19 40 8·64	10·778	21 28 3·1	26·27	1 10·17	9 5·90	0·919
Sat.	14	19 44 27·30	10·749	21 17 32·6	27·29	1 10·08	9 27·95	0·890
Sun.	15	19 48 45·28	10·720	21 6 37·6	28·30	1 9·99	9 49·31	0·861
Mon.	16	19 53 2·56	10·690	20 55 18·4	29·29	1 9·90	10 9·98	0·831
Tues.	17	19 57 19·13	10·660	20 43 35·4	30·28	1 9·80	10 29·93	0·801
Wed.	18	20 1 34·97	10·628	20 31 28·8	31·23	1 9·70	10 49·16	0·769
Thur.	19	20 5 50·05	10·597	20 18 59·2	32·19	1 9·60	11 7·62	0·738
Frid.	20	20 10 4·37	10·566	20 6 6·7	33·13	1 9·50	11 25·34	0·707
Sat.	21	20 14 17·95	10·533	19 52 51·6	34·05	1 9·40	11 42·31	0·674
Sun.	22	20 18 30·74	10·500	19 39 14·5	34·95	1 9·29	11 58·49	0·642
Mon.	23	20 22 42·74	10·468	19 25 15·6	35·85	1 9·18	12 13·89	0·610
Tues.	24	20 26 53·97	10·435	19 10 55·2	36·73	1 9·07	12 28·52	0·577
Wed.	25	20 31 4·40	10·402	18 56 13·7	37·59	1 8·96	12 42·37	0·544
Thur.	26	20 35 14·04	10·368	18 41 11·5	38·44	1 8·85	12 55·42	0·511
Frid.	27	20 39 22·88	10·335	18 25 49·0	39·28	1 8·74	13 7·68	0·477
Sat.	28	20 43 30·92	10·302	18 10 6·4	40·09	1 8·63	13 19·13	0·445
Sun.	29	20 47 38·17	10·268	17 54 4·2	40·90	1 8·51	13 29·81	0·410
Mon.	30	20 51 44·61	10·235	17 37 42·7	41·68	1 8·39	13 39·66	0·378
Tues.	31	20 55 50·26	10·201	17 21 2·3	42·45	1 8·28	13 48·72	0·344
Wed.	32	20 59 55·09		S.17 4 3·6		1 8·16	13 56·97	

* Mean Time of the Semidiameter passing may be found by subtracting 0·19 from the *Sidereal Time*.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Right Ascension.	Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Sun.	1	18 47 39.23	S. 23 0 36.8	16 17.3	3 56.69	18 43 42.54
Mon.	2	18 52 4.03	22 55 21.4	16 17.3	4 24.94	18 47 39.09
Tues.	3	18 56 28.49	22 49 38.7	16 17.3	4 52.84	18 51 35.65
Wed.	4	19 0 52.56	22 43 28.6	16 17.3	5 20.35	18 55 32.21
Thur.	5	19 5 16.24	22 36 51.5	16 17.2	5 47.46	18 59 28.78
Frid.	6	19 9 39.46	22 29 47.5	16 17.2	6 14.12	19 3 25.34
Sat.	7	19 14 2.21	22 22 17.0	16 17.2	6 40.30	19 7 21.91
Sun.	8	19 18 24.45	22 14 19.9	16 17.1	7 5.98	19 11 18.47
Mon.	9	19 22 46.15	22 5 56.7	16 17.1	7 31.12	19 15 15.03
Tues.	10	19 27 7.27	21 57 7.5	16 17.1	7 55.69	19 19 11.58
Wed.	11	19 31 27.80	21 47 52.7	16 17.0	8 19.67	19 23 8.13
Thur.	12	19 35 47.72	21 38 12.4	16 16.9	8 43.03	19 27 4.69
Frid.	13	19 40 7.00	21 28 7.0	16 16.9	9 5.76	19 31 1.24
Sat.	14	19 44 25.60	21 17 36.8	16 16.8	9 27.81	19 34 57.79
Sun.	15	19 48 43.52	21 6 42.1	16 16.8	9 49.17	19 38 54.35
Mon.	16	19 53 0.75	20 55 23.3	16 16.7	10 9.84	19 42 50.91
Tues.	17	19 57 17.26	20 43 40.6	16 16.6	10 29.79	19 46 47.47
Wed.	18	20 1 33.05	20 31 34.4	16 16.5	10 49.02	19 50 44.03
Thur.	19	20 5 48.08	20 19 5.0	16 16.4	11 7.48	19 54 40.60
Frid.	20	20 10 2.36	20 6 12.9	16 16.4	11 25.20	19 58 37.16
Sat.	21	20 14 15.89	19 52 58.2	16 16.2	11 42.17	20 2 33.72
Sun.	22	20 18 28.64	19 39 21.4	16 16.1	11 58.36	20 6 30.28
Mon.	23	20 22 40.60	19 25 22.8	16 16.0	12 13.76	20 10 26.84
Tues.	24	20 26 51.79	19 11 2.7	16 15.9	12 28.40	20 14 23.39
Wed.	25	20 31 2.19	18 56 21.6	16 15.8	12 42.25	20 94
Thur.	26	20 35 11.80	18 41 19.7	16 15.7	12 55.30	0
Frid.	27	20 39 20.62	18 25 57.5	16 15.5	13 7.57	5
Sat.	28	20 43 28.63	18 10 15.2	16	13 19.03	0
Sun.	29	20 47 35.86	17 54 13.3		13 29.71	
Mon.	30	20 51 42.28	17 37 52.1		13 39.57	
Tues.	31	20 55 47.91	17 21 12.0		13 48.4	
Wed.	32	20 59 52.72	S. 17 4 13.5			

* The Semidiameter for Apparent Noon may be

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Paral	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Mid
1	280 57 12.0	S. 0.20	9.9926562	15 40.3	15 48.1	57 30.7	57.5
2	281 58 22.7	0.33	9.9926616	15 56.0	16 3.9	58 28.3	58.5
3	282 59 33.6	0.46	9.9926690	16 11.7	16 19.1	59 25.9	59.5
4	284 0 44.5	0.58	9.9926782	16 25.8	16 31.7	60 17.6	60.3
5	285 1 55.6	0.68	9.9926891	16 36.6	16 40.4	60 57.4	61.1
6	286 3 6.5	0.75	9.9927017	16 42.9	16 44.0	61 20.2	61.2
7	287 4 17.2	0.80	9.9927160	16 43.7	16 42.0	61 23.3	61.1
8	288 5 27.6	0.82	9.9927319	16 38.9	16 34.7	61 5.8	60.5
9	289 6 37.6	0.81	9.9927494	16 29.4	16 23.2	60 31.0	60.0
10	290 7 46.9	0.77	9.9927687	16 16.3	16 9.0	59 42.9	59.1
11	291 8 55.7	0.70	9.9927899	16 1.3	15 53.5	58 47.7	58.0
12	292 10 3.9	0.60	9.9928129	15 45.8	15 38.3	57 50.9	57.0
13	293 11 11.4	0.49	9.9928378	15 31.1	15 24.3	56 56.8	56.0
14	294 12 18.1	0.37	9.9928650	15 17.9	15 12.2	56 8.6	55.0
15	295 13 23.9	0.23	9.9928943	15 6.9	15 2.1	55 28.0	55.0
16	296 14 29.1	S. 0.09	9.9929260	14 58.0	14 54.3	54 55.3	54.0
17	297 15 33.3	N. 0.04	9.9929601	14 51.1	14 48.5	54 30.0	54.0
18	298 16 36.8	0.14	9.9929968	14 46.3	14 44.6	54 12.5	54.0
19	299 17 39.3	0.24	9.9930360	14 43.3	14 42.4	54 1.3	53.0
20	300 18 41.0	0.31	9.9930779	14 41.9	14 41.7	53 56.2	53.0
21	301 19 42.0	0.35	9.9931226	14 41.8	14 42.4	53 56.1	53.0
22	302 20 42.1	0.36	9.9931700	14 43.3	14 44.6	54 1.5	54.0
23	303 21 41.3	0.35	9.9932201	14 46.1	14 48.1	54 11.9	54.0
24	304 22 39.9	0.30	9.9932729	14 50.5	14 53.1	54 27.7	54.0
25	305 23 37.6	0.23	9.9933281	14 56.3	14 59.8	54 49.1	55.0
26	306 24 34.6	0.13	9.9933857	15 3.7	15 8.1	55 16.5	55.0
27	307 25 31.0	N. 0.01	9.9934457	15 12.9	15 18.2	55 50.1	56.0
28	308 26 26.6	S. 0.11	9.9935080	15 23.9	15 30.0	56 30.3	56.0
29	309 27 21.5	0.25	9.9935723	15 36.5	15 43.3	57 16.7	57.0
30	310 28 15.8	0.37	9.9936385	15 50.4	15 57.5	58 7.6	58.0
31	311 29 9.3	0.49	9.9937064	16 4.6	16 11.6	58 59.9	59.0
32	312 30 1.9	S. 0.59	9.9937760	16 18.3	16 24.3	59 49.9	60.0

MEAN TIME.

		THE MOON'S							
Day of the Week.	Day of the Month.	Longitude.		Latitude.		Age.		Meridian	
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.		
								d	h m
n.	1	206° 58' 41" .4	213° 40' 13" .0	N. 1° 2' 51" .2	N. 0° 27' 32" .6	24 .0	19 35 .6		
n.	2	220 28 42 .8	227 24 27 .9	S. 0 8 44 .7	S. 0 45 31 .0	25 .0	20 27 .5		
es.	3	234 27 33 .8	241 37 57 .6	1 22 12 .4	1 58 11 .2	26 .0	21 25 .3		
ed.	4	248 55 22 .1	256 19 18 .0	2 32 46 .7	3 5 16 .8	27 .0	22 28 .8		
ur.	5	263 48 59 .0	271 23 27 .6	3 34 58 .4	4 1 10 .1	28 .0	23 36 .1		
id.	6	279 1 31 .1	286 41 48 .2	4 23 14 .4	4 40 39 .0	29 .0	0		
t.	7	294 22 49 .4	302 3 5 .0	4 53 0 .4	5 0 2 .7	0 .5	0 43 .5		
n.	8	309 41 4 .2	317 15 26 .4	5 1 41 .1	4 57 59 .5	1 .5	1 47 .4		
on.	9	324 44 57 .1	332 8 38 .2	4 49 11 .5	4 35 37 .4	2 .5	2 45 .9		
es.	10	339 25 42 .1	346 35 39 .8	4 17 44 .0	3 56 1 .7	3 .5	3 38 .9		
ed.	11	353 38 13 .6	0 33 19 .7	3 31 2 .6	3 3 21 .1	4 .5	4 27 .6		
ur.	12	7 21 6 .0	14 1 49 .2	2 33 30 .7	2 2 2 .1	5 .5	5 13 .5		
id.	13	20 35 52 .6	27 3 47 .1	1 29 26 .0	S. 0 56 10 .4	6 .5	5 58 .0		
at.	14	33 26 4 .4	39 43 20 .5	S. 0 22 41 .4	N. 0 10 37 .4	7 .5	6 42 .5		
on.	15	45 56 10 .5	52 5 10 .7	N. 0 43 24 .4	1 15 19 .0	8 .5	7 27 .9		
on.	16	58 10 55 .5	64 13 58 .3	1 46 2 .3	2 15 18 .0	9 .5	8 15 .1		
es.	17	70 14 49 .4	76 13 56 .5	2 42 50 .1	3 8 23 .6	10 .5	9 4 .1		
ed.	18	82 11 46 .0	88 8 39 .1	3 31 44 .5	3 52 41 .1	11 .5	9 54 .7		
ur.	19	94 4 55 .8	100 0 53 .2	4 11 1 .7	4 26 36 .0	12 .5	10 45 .9		
id.	20	105 56 45 .0	111 52 44 .3	4 39 14 .8	4 48 51 .1	13 .5	11 36 .6		
at.	21	117 49 1 .0	123 45 44 .8	4 55 18 .7	4 58 33 .2	14 .5	12 25 .7		
on.	22	129 43 4 .4	135 41 7 .8	4 58 31 .8	4 55 13 .4	15 .5	13 12 .6		
on.	23	141 40 4 .1	147 40 3 .3	4 48 38 .5	4 38 49 .9	16 .5	13 57 .1		
es.	24	153 41 16 .7	159 43 57 .5	4 25 51 .9	4 9 50 .4	17 .5	14 39 .7		
ed.	25	165 48 20 .5	171 54 43 .7	3 50 52 .8	3 29 8 .5		1		
ur.	26	178 3 28 .0	184 14 55 .8	3 4 48 .4	2 38 4 .8		3		
id.	27	190 29 32 .4	196 47 46 .2	2 9 12 .4	1 38 26 .9		5		
at.	28	203 10 5 .6	209 37 0 .5	N. 1 6 .	30 .7				
on.	29	216 9 0 .0	222 46 34 .1	S. 0 1	53				
on.	30	229 30 7 .4	236 20 2 .7	1 11					
es.	31	243 16 34 .8	250 19 52 .9	2 19					
ed.	32	257 29 54 .2	264 46 25 .6	S. 3 :					

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. for 1
SUNDAY 1.				TUESDAY 3.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	13 41 39.28	S. 9 25 43.1	146.17	0	15 26 55.97	S. 20 13 53.6	116
1	13 43 40.75	9 40 20.1	145.93	1	15 29 19.94	20 25 33.2	115
2	13 45 42.57	9 54 55.7	145.67	2	15 31 44.48	20 37 6.3	114
3	13 47 44.74	10 9 29.7	145.42	3	15 34 9.58	20 48 32.8	113
4	13 49 47.27	10 24 2.2	145.12	4	15 36 35.25	20 59 52.5	112
5	13 51 50.17	10 38 32.9	144.83	5	15 39 1.48	21 11 5.4	110
6	13 53 53.44	10 53 1.9	144.53	6	15 41 28.28	21 22 11.2	109
7	13 55 57.09	11 7 29.1	144.20	7	15 43 55.64	21 33 9.9	108
8	13 58 1.12	11 21 54.3	143.87	8	15 46 23.58	21 44 1.4	107
9	14 0 5.54	11 36 17.5	143.52	9	15 48 52.08	21 54 45.4	106
10	14 2 10.36	11 50 38.6	143.15	10	15 51 21.15	22 5 21.9	104
11	14 4 15.57	12 4 57.5	142.77	11	15 53 50.78	22 15 50.8	103
12	14 6 21.19	12 19 14.1	142.38	12	15 56 20.98	22 26 11.8	102
13	14 8 27.22	12 33 28.4	141.95	13	15 58 51.75	22 36 24.9	100
14	14 10 33.66	12 47 40.1	141.55	14	16 1 23.08	22 46 29.9	99
15	14 12 40.53	13 1 49.4	141.10	15	16 3 54.98	22 56 26.7	98
16	14 14 47.82	13 15 56.0	140.65	16	16 6 27.44	23 6 15.2	96
17	14 16 55.55	13 29 59.9	140.17	17	16 9 0.46	23 15 55.2	95
18	14 19 3.72	13 44 0.9	139.68	18	16 11 34.04	23 25 26.6	93
19	14 21 12.33	13 57 59.0	139.18	19	16 14 8.18	23 34 49.2	92
20	14 23 21.38	14 11 54.1	138.65	20	16 16 42.87	23 44 3.0	90
21	14 25 30.89	14 25 46.0	138.12	21	16 19 18.12	23 53 7.7	89
22	14 27 40.86	14 39 34.7	137.57	22	16 21 53.91	24 2 3.3	87
23	14 29 51.29	S. 14 53 20.1	137.00	23	16 24 30.24	S. 24 10 49.6	86
MONDAY 2.				WEDNESDAY 4.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	14 32 2.19	S. 15 7 2.1	136.42	0	16 27 7.11	S. 24 19 26.6	84
1	14 34 13.57	15 20 40.6	135.80	1	16 29 44.52	24 27 54.0	82
2	14 36 25.42	15 34 15.4	135.18	2	16 32 22.47	24 36 11.8	81
3	14 38 37.76	15 47 46.5	134.53	3	16 35 0.94	24 44 19.7	79
4	14 40 50.59	16 1 13.7	133.87	4	16 37 39.93	24 52 17.8	77
5	14 43 3.91	16 14 36.9	133.20	5	16 40 19.43	25 0 5.7	76
6	14 45 17.73	16 27 56.1	132.50	6	16 42 59.45	25 7 43.5	74
7	14 47 32.05	16 41 11.1	131.78	7	16 45 39.97	25 15 11.0	72
8	14 49 46.88	16 54 21.8	131.07	8	16 48 20.98	25 22 28.0	71
9	14 52 2.22	17 7 28.2	130.28	9	16 51 2.49	25 29 34.6	69
10	14 54 18.07	17 20 29.9	129.53	10	16 53 44.48	25 36 30.4	67
11	14 56 34.44	17 33 27.1	128.73	11	16 56 26.94	25 43 15.4	65
12	14 58 51.32	17 46 19.5	127.92	12	16 59 9.88	25 49 49.6	63
13	15 1 8.74	17 59 7.0	127.10	13	17 1 53.28	25 56 12.7	62
14	15 3 26.68	18 11 49.6	126.23	14	17 4 37.12	26 2 24.7	60
15	15 5 45.16	18 24 27.0	125.37	15	17 7 21.41	26 8 25.4	58
16	15 8 4.17	18 36 59.2	124.47	16	17 10 6.13	26 14 14.8	56
17	15 10 23.73	18 49 26.0	123.55	17	17 12 51.28	26 19 52.6	54
18	15 12 43.83	19 1 47.3	122.63	18	17 15 36.84	26 25 18.9	52
19	15 15 4.47	19 14 3.1	121.68	19	17 18 22.81	26 30 33.5	50
20	15 17 25.67	19 26 13.2	120.68	20	17 21 9.17	26 35 36.4	48
21	15 19 47.41	19 38 17.3	119.72	21	17 23 55.92	26 40 27.4	46
22	15 22 9.71	19 50 15.6	118.68	22	17 26 43.04	26 45 6.4	44
23	15 24 32.56	20 2 7.7	117.65	23	17 29 30.52	26 49 33.3	42
24	15 26 55.97	S. 20 13 53.6		24	17 32 18.35	S. 26 53 48.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

ur.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 5.				SATURDAY 7.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	17 32 18.35	S. 26 53 48.0	40.42	0	19 48 59.89	S. 26 4 0.1	63.07
1	17 35 6.53	26 57 50.5	38.37	1	19 51 47.92	25 57 41.7	65.07
2	17 37 55.04	27 1 40.7	36.28	2	19 54 35.60	25 51 11.3	67.07
3	17 40 43.87	27 5 18.4	34.22	3	19 57 22.94	25 44 28.9	69.03
4	17 43 33.00	27 8 43.7	32.10	4	20 0 9.92	25 37 34.7	70.98
5	17 46 22.42	27 11 56.3	30.02	5	20 2 56.53	25 30 28.8	72.93
6	17 49 12.11	27 14 56.4	27.88	6	20 5 42.75	25 23 11.2	74.87
7	17 52 2.07	27 17 43.7	25.77	7	20 8 28.59	25 15 42.0	76.75
8	17 54 52.28	27 20 18.3	23.62	8	20 11 14.03	25 8 1.5	78.65
9	17 57 42.73	27 22 40.0	21.47	9	20 13 59.06	25 0 9.6	80.52
0	18 0 33.41	27 24 48.8	19.32	10	20 16 43.68	24 52 6.5	82.37
1	18 3 24.29	27 26 44.7	17.15	11	20 19 27.87	24 43 52.3	84.18
2	18 6 15.36	27 28 27.6	14.97	12	20 22 11.62	24 35 27.2	86.00
3	18 9 6.62	27 29 57.4	12.78	13	20 24 54.93	24 26 51.2	87.77
4	18 11 58.05	27 31 14.1	10.60	14	20 27 37.79	24 18 4.6	89.55
5	18 14 49.63	27 32 17.7	8.40	15	20 30 20.19	24 9 7.3	91.28
6	18 17 41.34	27 33 8.1	6.20	16	20 33 2.13	23 59 59.6	93.02
7	18 20 33.18	27 33 45.3	4.00	17	20 35 43.60	23 50 41.5	94.70
8	18 23 25.13	27 34 9.3	1.78	18	20 38 24.59	23 41 13.3	96.40
9	18 26 17.17	27 34 20.0	0.42	19	20 41 5.11	23 31 34.9	98.05
0	18 29 9.29	27 34 17.5	2.65	20	20 43 45.14	23 21 46.6	99.68
1	18 32 1.47	27 34 1.6	4.85	21	20 46 24.68	23 11 48.5	101.32
2	18 34 53.70	27 33 32.5	7.08	22	20 49 3.72	23 1 40.6	102.88
3	18 37 45.96	S. 27 32 50.0	9.30	23	20 51 42.27	S. 22 51 23.3	104.47
FRIDAY 6.				SUNDAY 8.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	18 40 38.24	S. 27 31 54.2	11.53	0	20 54 20.30	S. 22 40 56.5	106.02
1	18 43 30.53	27 30 45.0	13.73	1	20 56 57.83	22 30 20.4	107.53
2	18 46 22.80	27 29 22.6	15.97	2	20 59 34.85	22 19 35.2	109.03
3	18 49 15.04	27 27 46.8	18.18	3	21 2 11.36	22 8 41.0	110.50
4	18 52 7.24	27 25 57.7	20.38	4	21 4 47.35	21 57 38.0	111.95
5	18 54 59.39	27 23 55.4	22.60	5	21 7 22.81	21 46 26.3	113.38
6	18 57 51.46	27 21 39.8	24.80	6	21 9 57.76	21 35 6.0	114.80
7	19 0 43.44	27 19 11.0	27.02	7	21 12 32.18	21 23 37.2	116.17
8	19 3 35.32	27 16 28.9	29.18	8	21 15 6.07	21 12 0.2	117.53
9	19 6 27.08	27 13 33.8	31.38	9	21 17 39.43	21 0 15.0	118.85
0	19 9 18.71	27 10 25.5	33.57	10	21 20 12.26	20 48 21.9	120.18
1	19 12 10.19	27 7 4.1	35.75	11	21 22 44.56	20 36 20.8	121.45
2	19 15 1.51	27 3 29.6	37.90	12	21 25 16.33	20 24 12.1	122.72
3	19 17 52.66	26 59 42.2	40.07	13	21 27 47.56	20 11 55.8	123.93
4	19 20 43.61	26 55 41.8	42.22	14	21 30 18.26	19 59 32.2	125.17
5	19 23 34.36	26 51 28.5	44.35	15	21 32 48.42	19 47 1.2	126.35
6	19 26 24.90	26 47 2.4	46.47	16	21 35 18.06	19 34 23.1	127.50
7	19 29 15.21	26 42 23.6	48.60	17	21 37 47.16	19 21 38.1	128.67
8	19 32 5.28	26 37 32.0	50.70	18	21 40 15.73	19 8 46.1	129.77
9	19 34 55.09	26 32 27.8	52.78	19	21 42 43.77	18 55 47.5	130.87
0	19 37 44.63	26 27 11.1	54.87	20	21 45 11.28	18 42 42.3	131.88
1	19 40 33.89	26 21 41.0	56.93		21 47 38.26	18 29 30.6	132.88
2	19 43 22.86	26 16 0.2	58.98		21 50 4.72	18 16 12.7	133.88
3	19 46 11.53	26 10 0.8	61.03		21 52 30.65	18 2 48.7	134.87
4	19 48 59.89	S. 26 4 0.0	63.07		21 54 56.06	S. 17 49 1.9	135.87

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 9.				WEDNESDAY 11.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	21 54 56.06	S. 17 49 18.5	136.00	0	23 42 14.13	S. 5 45 27.4	158.78
1	21 57 20.95	17 35 42.5	136.95	1	23 44 18.96	5 29 34.7	158.83
2	21 59 45.33	17 22 0.8	137.88	2	23 46 23.51	5 13 41.7	158.85
3	22 2 9.19	17 8 13.5	138.80	3	23 48 27.77	4 57 48.6	158.88
4	22 4 32.53	16 54 20.7	139.67	4	23 50 31.76	4 41 55.3	158.88
5	22 6 55.37	16 40 22.7	140.55	5	23 52 35.48	4 26 2.0	158.88
6	22 9 17.70	16 26 19.4	141.38	6	23 54 38.94	4 10 8.7	158.85
7	22 11 39.52	16 12 11.1	142.20	7	23 56 42.14	3 54 15.6	158.82
8	22 14 0.85	15 57 57.9	143.00	8	23 58 45.09	3 38 22.7	158.77
9	22 16 21.67	15 43 39.9	143.78	9	0 0 47.79	3 22 30.1	158.70
10	22 18 42.01	15 29 17.2	144.53	10	0 2 50.25	3 6 37.9	158.63
11	22 21 1.85	15 14 50.0	145.25	11	0 4 52.47	2 50 46.1	158.53
12	22 23 21.21	15 0 18.5	145.97	12	0 6 54.47	2 34 54.9	158.43
13	22 25 40.08	14 45 42.7	146.65	13	0 8 56.24	2 19 4.3	158.32
14	22 27 58.48	14 31 2.8	147.32	14	0 10 57.80	2 3 14.4	158.20
15	22 30 16.39	14 16 18.9	147.95	15	0 12 59.15	1 47 25.2	158.07
16	22 32 33.84	14 1 31.2	148.58	16	0 15 0.29	1 31 36.8	157.90
17	22 34 50.82	13 46 39.7	149.20	17	0 17 1.23	1 15 49.4	157.75
18	22 37 7.35	13 31 44.5	149.77	18	0 19 1.97	1 0 2.9	157.58
19	22 39 23.41	13 16 45.9	150.35	19	0 21 2.53	0 44 17.4	157.38
20	22 41 39.03	13 1 43.8	150.88	20	0 23 2.90	0 28 33.1	157.18
21	22 43 54.20	12 46 38.5	151.40	21	0 25 3.09	S. 0 12 50.0	156.98
22	22 46 8.92	12 31 30.1	151.92	22	0 27 3.11	N. 0 2 51.9	156.77
23	22 48 23.21	S. 12 16 18.6	152.40	23	0 29 2.97	N. 0 18 32.5	156.53
TUESDAY 10.				THURSDAY 12.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	22 50 37.07	S. 12 1 4.2	152.87	0	0 31 2.66	N. 0 34 11.7	156.30
1	22 52 50.51	11 45 47.0	153.32	1	0 33 2.20	0 49 49.5	156.03
2	22 55 3.52	11 30 27.1	153.73	2	0 35 1.59	1 5 25.7	155.78
3	22 57 16.12	11 15 4.7	154.15	3	0 37 0.83	1 21 0.4	155.50
4	22 59 28.30	10 59 39.8	154.53	4	0 38 59.94	1 36 33.4	155.22
5	23 1 40.08	10 44 12.6	154.92	5	0 40 58.91	1 52 4.7	154.93
6	23 3 51.46	10 28 43.1	155.28	6	0 42 57.75	2 7 34.3	154.62
7	23 6 2.45	10 13 11.4	155.60	7	0 44 56.47	2 23 2.0	154.30
8	23 8 13.05	9 57 37.8	155.93	8	0 46 55.07	2 38 27.8	153.98
9	23 10 23.26	9 42 2.2	156.22	9	0 48 53.56	2 53 51.7	153.63
10	23 12 33.09	9 26 24.9	156.52	10	0 50 51.94	3 9 13.5	153.30
11	23 14 42.55	9 10 45.8	156.78	11	0 52 50.21	3 24 33.3	152.93
12	23 16 51.64	8 55 5.1	157.03	12	0 54 48.39	3 39 50.9	152.57
13	23 19 0.37	8 39 22.9	157.27	13	0 56 46.48	3 55 6.3	152.18
14	23 21 8.74	8 23 39.3	157.48	14	0 58 44.48	4 10 19.4	151.82
15	23 23 16.76	8 7 54.4	157.68	15	1 0 42.40	4 25 30.3	151.40
16	23 25 24.44	7 52 8.3	157.88	16	1 2 40.25	4 40 38.7	151.02
17	23 27 31.78	7 36 21.0	158.03	17	1 4 38.02	4 55 44.8	150.58
18	23 29 38.78	7 20 32.8	158.18	18	1 6 35.73	5 10 48.3	150.18
19	23 31 45.46	7 4 43.7	158.33	19	1 8 33.38	5 25 49.4	149.73
20	23 33 51.81	6 48 53.7	158.45	20	1 10 30.97	5 40 47.8	149.30
21	23 35 57.85	6 33 3.0	158.57	21	1 12 28.51	5 55 43.6	148.83
22	23 38 3.58	6 17 11.6	158.63	22	1 14 26.01	6 10 36.6	148.40
23	23 40 9.00	6 1 19.8	158.73	23	1 16 23.46	6 25 27.0	147.92
24	23 42 14.13	S. 5 45 27.4		24	1 18 20.88	N. 6 40 14.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 13.				SUNDAY 15.		
h m s	° ' "	"		h m s	° ' "	"
1 18 20.88	N. 6 40 14.5	147.45	0	2 52 59.02	N. 17 19 0.6	115.03
1 20 18.27	6 54 59.2	146.97	1	2 54 59.71	17 30 30.8	114.17
1 22 15.63	7 9 41.0	146.47	2	2 57 0.55	17 41 55.8	113.30
1 24 12.97	7 24 19.8	145.97	3	2 59 1.55	17 53 15.6	112.43
1 26 10.30	7 38 55.6	145.45	4	3 1 2.69	18 4 30.2	111.53
1 28 7.61	7 53 28.3	144.93	5	3 3 4.00	18 15 39.4	110.65
1 30 4.92	8 7 57.9	144.40	6	3 5 5.46	18 26 43.3	109.75
1 32 2.22	8 22 24.3	143.87	7	3 7 7.08	18 37 41.8	108.83
1 33 59.52	8 36 47.5	143.33	8	3 9 8.86	18 48 34.8	107.93
1 35 56.82	8 51 7.5	142.77	9	3 11 10.81	18 59 22.4	107.00
1 37 54.14	9 5 24.1	142.20	10	3 13 12.92	19 10 4.4	106.08
1 39 51.47	9 19 37.3	141.63	11	3 15 15.20	19 20 40.9	105.13
1 41 48.82	9 33 47.1	141.05	12	3 17 17.64	19 31 11.7	104.20
1 43 46.19	9 47 53.4	140.47	13	3 19 20.26	19 41 36.9	103.23
1 45 43.59	10 1 56.2	139.87	14	3 21 23.05	19 51 56.3	102.30
1 47 41.02	10 15 55.4	139.28	15	3 23 26.01	20 2 10.1	101.32
1 49 38.48	10 29 51.1	138.65	16	3 25 29.14	20 12 18.0	100.35
1 51 35.99	10 43 43.0	138.03	17	3 27 32.46	20 22 20.1	99.37
1 53 33.53	10 57 31.2	137.42	18	3 29 35.94	20 32 16.3	98.40
1 55 31.13	11 11 15.7	136.77	19	3 31 39.61	20 42 6.7	97.38
1 57 28.78	11 24 56.3	136.13	20	3 33 43.46	20 51 51.0	96.40
1 59 26.49	11 38 33.1	135.48	21	3 35 47.48	21 1 29.4	95.38
2 1 24.25	11 52 6.0	134.83	22	3 37 51.69	21 11 1.7	94.38
2 3 22.08	N. 12 5 35.0	134.15	23	3 39 56.07	N. 21 20 28.0	93.35
SATURDAY 14.				MONDAY 16.		
h m s	° ' "	"		h m s	° ' "	"
2 5 19.98	N. 12 18 59.9	133.48	0	3 42 0.64	N. 21 29 48.1	92.33
2 7 17.95	12 32 20.8	132.80	1	3 44 5.39	21 39 2.1	91.30
2 9 16.00	12 45 37.6	132.12	2	3 46 10.33	21 48 9.9	90.25
2 11 14.13	12 58 50.3	131.42	3	3 48 15.45	21 57 11.4	89.20
2 13 12.34	13 11 58.8	130.72	4	3 50 20.75	22 6 6.6	88.15
2 15 10.63	13 25 3.1	130.00	5	3 52 26.24	22 14 55.5	87.10
2 17 9.02	13 38 3.1	129.28	6	3 54 31.91	22 23 38.1	86.02
2 19 7.50	13 50 58.8	128.55	7	3 56 37.77	22 32 14.2	84.95
2 21 6.08	14 3 50.1	127.82	8	3 58 43.81	22 40 43.9	83.87
2 23 4.75	14 16 37.0	127.08	9	4 0 50.04	22 49 7.1	82.78
2 25 3.53	14 29 19.5	126.32	10	4 2 56.45	22 57 23.8	81.68
2 27 2.42	14 41 57.4	125.57	11	4 5 3.05	23 5 33.9	80.58
2 29 1.41	14 54 30.8	124.80	12	4 7 9.83	23 13 37.4	79.47
2 31 0.52	15 6 59.6	124.03	13	4 9 16.79	23 21 34.2	78.37
2 32 59.74	15 19 23.8	123.25	14	4 11 23.93	23 29 24.4	77.23
2 34 59.09	15 31 43.3	122.47	15	4 13 31.25	23 37 7.8	76.12
2 36 58.55	15 43 58.1	121.67	16	4 15 38.75	23 44 44.5	74.98
2 38 58.15	15 56 8.1	120.85	17	4 17 46.44	23 52 14.4	73.83
2 40 57.87	16 8 13.2	120.05	18	4 19 54.31	23 59 37.4	72.70
2 42 57.72	16 20 13.5	119.23	19	4 22 2.35	24 6 53.6	71.53
2 44 57.70	16 32 8.9	118.42	20	4 24 10.57	24 14 2.8	70.38
2 46 57.82	16 43 59.4	117.58	21	4 26 18.96	24 21 5.1	69.22
2 48 58.08	16 55 44.9	116.73	22	4 28 27.53	24 28 0.4	68.05
2 50 58.48	17 7 25.3	115.88	23	4 30 36.27	24 34 48.7	66.87
2 52 59.02	N. 17 19 0.6		24	4 32 45.18	N. 24 41 29.9	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. for
TUESDAY 17.				THURSDAY 19.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	
0	4 32 45.18	N.24 41 29.9	65.68	0	6 18 22.64	N.27 34 52.1	4
1	4 34 54.26	24 48 4.0	64.50	1	6 20 36.33	27 35 16.2	2
2	4 37 3.51	24 54 31.0	63.32	2	6 22 50.02	27 35 32.2	1
3	4 39 12.92	25 0 50.9	62.10	3	6 25 3.69	27 35 40.3	0
4	4 41 22.50	25 7 3.5	60.90	4	6 27 17.36	27 35 40.3	1
5	4 43 32.24	25 13 8.9	59.70	5	6 29 31.00	27 35 32.2	2
6	4 45 42.14	25 19 7.1	58.48	6	6 31 44.62	27 35 16.2	4
7	4 47 52.19	25 24 58.0	57.25	7	6 33 58.22	27 34 52.1	5
8	4 50 2.41	25 30 41.5	56.03	8	6 36 11.78	27 34 20.0	6
9	4 52 12.77	25 36 17.7	54.80	9	6 38 25.31	27 33 39.9	8
10	4 54 23.29	25 41 46.5	53.57	10	6 40 38.79	27 32 51.8	9
11	4 56 33.96	25 47 7.9	52.32	11	6 42 52.23	27 31 55.8	10
12	4 58 44.77	25 52 21.8	51.08	12	6 45 5.61	27 30 51.7	12
13	5 0 55.73	25 57 28.3	49.82	13	6 47 18.94	27 29 39.7	13
14	5 3 6.83	26 2 27.2	48.57	14	6 49 32.21	27 28 19.7	14
15	5 5 18.06	26 7 18.6	47.32	15	6 51 45.41	27 26 51.7	15
16	5 7 29.43	26 12 2.5	46.05	16	6 53 58.54	27 25 15.9	17
17	5 9 40.93	26 16 38.8	44.78	17	6 56 11.60	27 23 32.1	18
18	5 11 52.56	26 21 7.5	43.50	18	6 58 24.58	27 21 40.3	19
19	5 14 4.32	26 25 28.5	42.23	19	7 0 37.47	27 19 40.8	21
20	5 16 16.19	26 29 41.9	40.95	20	7 2 50.28	27 17 33.3	22
21	5 18 28.19	26 33 47.6	39.67	21	7 5 3.00	27 15 17.9	23
22	5 20 40.30	26 37 45.6	38.38	22	7 7 15.62	27 12 54.7	25
23	5 22 52.52	N.26 41 35.9	37.08	23	7 9 28.14	N.27 10 23.7	26
WEDNESDAY 18.				FRIDAY 20.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	
0	5 25 4.85	N.26 45 18.4	35.80	0	7 11 40.56	N.27 7 45.0	27
1	5 27 17.28	26 48 53.2	34.48	1	7 13 52.87	27 4 58.4	29
2	5 29 29.81	26 52 20.1	33.20	2	7 16 5.06	27 2 4.1	30
3	5 31 42.44	26 55 39.3	31.88	3	7 18 17.14	26 59 2.0	31
4	5 33 55.16	26 58 50.6	30.58	4	7 20 29.10	26 55 52.3	32
5	5 36 7.97	27 1 54.1	29.28	5	7 22 40.93	26 52 34.8	34
6	5 38 20.86	27 4 49.8	27.95	6	7 24 52.63	26 49 9.7	35
7	5 40 33.84	27 7 37.5	26.65	7	7 27 4.20	26 45 36.9	36
8	5 42 46.89	27 10 17.4	25.32	8	7 29 15.63	26 41 56.5	38
9	5 45 0.01	27 12 49.3	24.02	9	7 31 26.92	26 38 8.5	39
10	5 47 13.20	27 15 13.4	22.68	10	7 33 38.07	26 34 13.0	40
11	5 49 26.46	27 17 29.5	21.35	11	7 35 49.06	26 30 9.9	41
12	5 51 39.78	27 19 37.6	20.03	12	7 37 59.90	26 25 59.4	43
13	5 53 53.15	27 21 37.8	18.70	13	7 40 10.59	26 21 41.4	44
14	5 56 6.58	27 23 30.0	17.37	14	7 42 21.11	26 17 15.9	45
15	5 58 20.05	27 25 14.2	16.05	15	7 44 31.47	26 12 43.0	46
16	6 0 33.56	27 26 50.5	14.72	16	7 46 41.67	26 8 2.8	47
17	6 2 47.11	27 28 18.8	13.37	17	7 48 51.70	26 3 15.2	49
18	6 5 0.69	27 29 39.0	12.03	18	7 51 1.55	25 58 20.3	50
19	6 7 14.31	27 30 51.2	10.72	19	7 53 11.23	25 53 18.1	51
20	6 9 27.94	27 31 55.5	9.37	20	7 55 20.73	25 48 8.6	52
21	6 11 41.60	27 32 51.7	8.02	21	7 57 30.05	25 42 52.0	53
22	6 13 55.27	27 33 39.8	6.70	22	7 59 39.19	25 37 28.2	55
23	6 16 8.95	27 34 20.0	5.35	23	8 1 48.14	25 31 57.3	56
24	6 18 22.64	N.27 34 52.1		24	8 3 56.89	N.25 26 19.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 21.				MONDAY 23.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	8 3 56.89	N. 25 26 19.2	57.52	0	9 42 44.03	N. 18 50 39.9	105.85
1	8 6 5.46	25 20 34.1	58.68	1	9 44 42.05	18 40 7.8	106.17
2	8 8 13.83	25 14 42.0	59.85	2	9 46 39.86	18 29 30.8	106.93
3	8 10 22.01	25 8 42.9	61.02	3	9 48 37.46	18 18 49.2	107.73
4	8 12 29.98	25 2 36.8	62.15	4	9 50 34.85	18 8 2.8	108.50
5	8 14 37.76	24 56 23.9	63.30	5	9 52 32.04	17 57 11.8	109.28
6	8 16 45.33	24 50 4.1	64.45	6	9 54 29.01	17 46 16.1	110.03
7	8 18 52.69	24 43 37.4	65.57	7	9 56 25.78	17 35 15.9	110.78
8	8 20 59.85	24 37 4.0	66.70	8	9 58 22.35	17 24 11.2	111.52
9	8 23 6.80	24 30 23.8	67.80	9	10 0 18.72	17 13 2.1	112.27
10	8 25 13.53	24 23 37.0	68.93	10	10 2 14.90	17 1 48.5	112.98
11	8 27 20.05	24 16 43.4	70.02	11	10 4 10.87	16 50 30.6	113.70
12	8 29 26.36	24 9 43.3	71.12	12	10 6 6.65	16 39 8.4	114.42
13	8 31 32.45	24 2 36.6	72.20	13	10 8 2.24	16 27 41.9	115.12
14	8 33 38.33	23 55 23.4	73.28	14	10 9 57.64	16 16 11.2	115.80
15	8 35 43.99	23 48 3.7	74.37	15	10 11 52.85	16 4 36.4	116.50
16	8 37 49.42	23 40 37.5	75.42	16	10 13 47.87	15 52 57.4	117.17
17	8 39 54.64	23 33 5.0	76.48	17	10 15 42.71	15 41 14.4	117.83
18	8 41 59.63	23 25 26.1	77.53	18	10 17 37.38	15 29 27.4	118.50
19	8 44 4.40	23 17 40.9	78.58	19	10 19 31.86	15 17 36.4	119.17
20	8 46 8.94	23 9 49.4	79.62	20	10 21 26.17	15 5 41.4	119.78
21	8 48 13.26	23 1 51.7	80.65	21	10 23 20.31	14 53 42.7	120.43
22	8 50 17.35	22 53 47.8	81.65	22	10 25 14.28	14 41 40.1	121.07
23	8 52 21.21	N. 22 45 37.9	82.68	23	10 27 8.07	N. 14 29 33.7	121.68
SUNDAY 22.				TUESDAY 24.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	8 54 24.85	N. 22 37 21.8	83.68	0	10 29 1.71	N. 14 17 23.6	122.30
1	8 56 28.26	22 28 59.7	84.67	1	10 30 55.18	14 5 9.8	122.88
2	8 58 31.44	22 20 31.7	85.67	2	10 32 48.50	13 52 52.5	123.50
3	9 0 34.39	22 11 57.7	86.63	3	10 34 41.66	13 40 31.5	124.08
4	9 2 37.12	22 3 17.9	87.62	4	10 36 34.66	13 28 7.0	124.65
5	9 4 39.61	21 54 32.2	88.58	5	10 38 27.52	13 15 39.1	125.23
6	9 6 41.88	21 45 40.7	89.53	6	10 40 20.23	13 3 7.7	125.80
7	9 8 43.92	21 36 43.5	90.48	7	10 42 12.79	12 50 32.9	126.35
8	9 10 45.73	21 27 40.6	91.43	8	10 44 5.22	12 37 54.8	126.90
9	9 12 47.31	21 18 32.0	92.35	9	10 45 57.50	12 25 13.4	127.45
10	9 14 48.66	21 9 17.9	93.28	10	10 47 49.65	12 12 28.7	127.97
11	9 16 49.79	20 59 58.2	94.20	11	10 49 41.67	11 59 40.9	128.50
12	9 18 50.69	20 50 33.0	95.10	12	10 51 33.57	11 46 49.9	129.02
13	9 20 51.36	20 41 2.4	96.02	13	10 53 25.33	11 33 55.8	129.52
14	9 22 51.81	20 31 26.3	96.90	14	10 55 16.98	11 20 58.7	130.02
15	9 24 52.03	20 21 44.9	97.78	15	10 57 8.51	11 7 58.6	130.32
16	9 26 52.02	20 11 58.2	98.65	16	10 58 59.92	10 54 55.5	131.00
17	9 28 51.79	20 2 6.3	99.53	17	11 0 51.22	10 41 49.5	131.47
18	9 30 51.34	19 52 9.1	100.37	18	11 2 42.42	10 28 40.7	131.95
19	9 32 50.67	19 42 6.9	101.23	19	11 4 33.51	10 15 29.0	132.40
20	9 34 49.78	19 31 59.5	102.08	20	11 6 24.50	10 2 14.6	132.87
21	9 36 48.67	19 21 47.0	102.90	21	11 8 15.39	9 48 57.4	133.30
22	9 38 47.34	19 11 29.6	103.73	22	11 10 6.19	9 35 37.6	133.75
23	9 40 45.79	19 1 7.2	104.55	23	11 11 56.90	9 22 15.1	134.18
24	9 42 44.03	N. 18 50 39.9		24	11 13 47.52	N. 9 8 50.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
WEDNESDAY 25.				FRIDAY 27.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	11 13 47.52	N. 9 8 50.0	134.60	0	12 41 57.01	S. 2 10 36.7	141.60
1	11 15 38.06	8 55 22.4	135.00	1	12 43 48.60	2 25 10.9	141.60
2	11 17 28.52	8 41 52.4	135.43	2	12 45 40.32	2 39 45.3	141.60
3	11 19 18.91	8 28 19.8	135.82	3	12 47 32.18	2 54 19.8	141.60
4	11 21 9.23	8 14 44.9	136.20	4	12 49 24.18	3 8 54.4	141.60
5	11 22 59.48	8 1 7.7	136.60	5	12 51 16.34	3 23 29.0	141.60
6	11 24 49.67	7 47 28.1	136.97	6	12 53 8.66	3 38 3.7	141.60
7	11 26 39.80	7 33 46.3	137.35	7	12 55 1.13	3 52 38.2	141.60
8	11 28 29.88	7 20 2.2	137.70	8	12 56 53.77	4 7 12.6	141.60
9	11 30 19.91	7 6 16.0	138.05	9	12 58 46.59	4 21 46.9	141.60
10	11 32 9.89	6 52 27.7	138.40	10	13 0 39.58	4 36 20.8	141.60
11	11 33 59.83	6 38 37.3	138.73	11	13 2 32.75	4 50 54.5	141.60
12	11 35 49.72	6 24 44.9	139.07	12	13 4 26.11	5 5 27.9	141.60
13	11 37 39.58	6 10 50.5	139.38	13	13 6 19.66	5 20 0.8	141.60
14	11 39 29.42	5 56 54.2	139.72	14	13 8 13.41	5 34 33.3	141.60
15	11 41 19.22	5 42 55.9	140.02	15	13 10 7.36	5 49 5.2	141.60
16	11 43 9.01	5 28 55.8	140.30	16	13 12 1.52	6 3 36.5	141.60
17	11 44 58.78	5 14 54.0	140.60	17	13 13 55.89	6 18 7.2	141.60
18	11 46 48.53	5 0 50.4	140.90	18	13 15 50.48	6 32 37.2	141.60
19	11 48 38.28	4 46 45.0	141.17	19	13 17 45.29	6 47 6.4	141.60
20	11 50 28.02	4 32 38.0	141.42	20	13 19 40.33	7 1 34.9	141.60
21	11 52 17.76	4 18 29.5	141.70	21	13 21 35.61	7 16 2.4	141.60
22	11 54 7.50	4 4 19.3	141.95	22	13 23 31.13	7 30 29.0	141.60
23	11 55 57.26	N. 3 50 7.6	142.18	23	13 25 26.89	S. 7 44 54.6	141.60
THURSDAY 26.				SATURDAY 28.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	11 57 47.02	N. 3 35 54.5	142.43	0	13 27 22.90	S. 7 59 19.1	141.60
1	11 59 36.80	3 21 39.9	142.65	1	13 29 19.17	8 13 42.5	141.60
2	12 1 26.60	3 7 24.0	142.87	2	13 31 15.69	8 28 4.8	141.60
3	12 3 16.43	2 53 6.8	143.10	3	13 33 12.49	8 42 25.7	141.60
4	12 5 6.29	2 38 48.2	143.30	4	13 35 9.55	8 56 45.4	141.60
5	12 6 56.18	2 24 28.4	143.48	5	13 37 6.89	9 11 3.6	141.60
6	12 8 46.11	2 10 7.5	143.68	6	13 39 4.51	9 25 20.4	141.60
7	12 10 36.09	1 55 45.4	143.87	7	13 41 2.42	9 39 35.7	141.60
8	12 12 26.12	1 41 22.2	144.03	8	13 43 0.63	9 53 49.4	141.60
9	12 14 16.20	1 26 58.0	144.20	9	13 44 59.13	10 8 1.4	141.60
10	12 16 6.33	1 12 32.8	144.37	10	13 46 57.93	10 22 11.7	141.60
11	12 17 56.53	0 58 6.6	144.50	11	13 48 57.04	10 36 20.2	141.60
12	12 19 46.80	0 43 39.6	144.65	12	13 50 56.47	10 50 26.8	141.60
13	12 21 37.14	0 29 11.7	144.78	13	13 52 56.22	11 4 31.4	141.60
14	12 23 27.55	0 14 43.0	144.90	14	13 54 56.29	11 18 34.1	141.60
15	12 25 18.05	N. 0 0 13.6	145.02	15	13 56 56.69	11 32 34.6	139.60
16	12 27 8.64	S. 0 14 16.5	145.13	16	13 58 57.43	11 46 33.0	139.60
17	12 28 59.31	0 28 47.3	145.23	17	14 0 58.50	12 0 29.1	139.60
18	12 30 50.08	0 43 18.7	145.32	18	14 2 59.93	12 14 22.9	139.60
19	12 32 40.95	0 57 50.6	145.40	19	14 5 1.71	12 28 14.3	139.60
20	12 34 31.93	1 12 23.0	145.48	20	14 7 3.84	12 42 3.3	139.60
21	12 36 23.02	1 26 55.9	145.55	21	14 9 6.33	12 55 49.7	139.60
22	12 38 14.23	1 41 29.2	145.60	22	14 11 9.20	13 9 33.5	139.60
23	12 40 5.56	1 56 2.8	145.65	23	14 13 12.43	13 23 14.6	139.60
24	12 41 57.01	S. 2 10 36.7		24	14 15 16.04	S. 13 36 52.9	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

hr.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 29.				TUESDAY 31.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	14 15 16.04	S. 13 36 52.9	135.92	0	16 3 1.25	S. 23 6 59.1	94.15
1	14 17 20.04	13 50 28.4	135.42	1	16 5 28.37	23 16 24.0	92.85
2	14 19 24.43	14 4 0.9	134.92	2	16 7 56.01	23 25 41.1	91.50
3	14 21 29.21	14 17 30.4	134.40	3	16 10 24.19	23 34 50.1	90.15
4	14 23 34.39	14 30 56.8	133.85	4	16 12 52.91	23 43 51.0	88.77
5	14 25 39.97	14 44 19.9	133.32	5	16 15 22.15	23 52 43.6	87.37
6	14 27 45.96	14 57 39.8	132.77	6	16 17 51.92	24 1 27.8	85.97
7	14 29 52.37	15 10 56.4	132.17	7	16 20 22.22	24 10 3.6	84.53
8	14 31 59.19	15 24 9.4	131.58	8	16 22 53.05	24 18 30.8	83.07
9	14 34 6.43	15 37 18.9	130.98	9	16 25 24.39	24 26 49.2	81.60
10	14 36 14.11	15 50 24.8	130.37	10	16 27 56.26	24 34 58.8	80.10
11	14 38 22.21	16 3 27.0	129.72	11	16 30 28.64	24 42 59.4	78.60
12	14 40 30.75	16 16 25.3	129.07	12	16 33 1.53	24 50 51.0	77.07
13	14 42 39.73	16 29 19.7	128.40	13	16 35 34.94	24 58 33.4	75.52
14	14 44 49.15	16 42 10.1	127.72	14	16 38 8.86	25 6 6.5	73.95
15	14 46 59.03	16 54 56.4	127.02	15	16 40 43.28	25 13 30.2	72.35
16	14 49 9.36	17 7 38.5	126.32	16	16 43 18.20	25 20 44.3	70.75
17	14 51 20.15	17 20 16.4	125.57	17	16 45 53.62	25 27 48.8	69.13
18	14 53 31.40	17 32 49.8	124.83	18	16 48 29.52	25 34 43.6	67.47
19	14 55 43.12	17 45 18.8	124.05	19	16 51 5.92	25 41 28.4	65.82
20	14 57 55.32	17 57 43.1	123.28	20	16 53 42.79	25 48 3.3	64.12
21	15 0 7.98	18 10 2.8	122.48	21	16 56 20.14	25 54 28.0	62.43
22	15 2 21.13	18 22 17.7	121.68	22	16 58 57.96	26 0 42.6	60.72
23	15 4 34.76	S. 18 34 27.8	120.83	23	17 1 36.24	S. 26 6 46.9	58.97
MONDAY 30.				WEDNESDAY, FEB. 1.			
0	15 6 48.87	S. 18 46 32.8	120.00	0	17 4 14.98	S. 26 12 40.7	
1	15 9 3.48	18 58 32.8	119.13				
2	15 11 18.59	19 10 27.6	118.25				
3	15 13 34.19	19 22 17.1	117.35				
4	15 15 50.29	19 34 1.2	116.43				
5	15 18 6.90	19 45 39.8	115.48				
6	15 20 24.02	19 57 12.7	114.55				
7	15 22 41.64	20 8 40.0	113.57				
8	15 24 59.78	20 20 1.4	112.58				
9	15 27 18.43	20 31 16.9	111.57				
10	15 29 37.60	20 42 26.3	110.53				
11	15 31 57.28	20 53 29.5	109.50				
12	15 34 17.49	21 4 26.5	108.43				
13	15 36 38.22	21 15 17.1	107.35				
14	15 38 59.48	21 26 1.2	106.25				
15	15 41 21.26	21 36 38.7	105.12				
16	15 43 43.58	21 47 9.4	103.98				
17	15 46 6.42	21 57 33.3	102.81				
18	15 48 29.80	22 7 50.3	101.61				
19	15 50 53.71	22 18 0.4	100.38				
20	15 53 18.15	22 28 2.5	99.12				
21	15 55 43.12	22 37 58.7	97.83				
22	15 58 8.63	22 47 46.0	96.51				
23	16 0 34.67	22 57 24.0	95.16				
24	16 3 1.25	S. 23 6					

PHASES OF THE MOON.

- New Moon - - - ^d ^h ^m 6 11 46.4
 ☾ First Quarter - - - 13 5 11.5
 ○ Full Moon - - - 21 7 45.1
 ☾ Last Quarter - - - 29 6 30.4

2000 - - - - - ^d ^h 6 16
 20 - - - - - 20 12

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.		Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
			° ' "		° ' "		° ' "		° ' "	
1	Jupiter	W.	70 7 49	2533	71 48 16	2513	73 29 11	2494	75 10 32	2474
	Mars	W.	60 7 44	2529	61 48 17	2510	63 29 16	2491	65 10 42	2471
	Regulus	W.	59 24 37	2564	61 4 21	2546	62 44 31	2527	64 25 7	2507
	Venus	E.	40 41 44	2997	39 11 27	2978	37 40 47	2960	36 9 44	2942
	SUN	E.	73 58 40	2909	72 26 33	2889	70 54 0	2869	69 21 1	2849
2	Jupiter	W.	83 43 59	2380	85 28 2	2361	87 12 33	2342	88 57 31	2323
	Mars	W.	73 44 43	2374	75 28 55	2355	77 13 35	2335	78 58 43	2316
	Regulus	W.	72 54 56	2410	74 38 16	2391	76 22 3	2372	78 6 18	2353
	Venus	E.	28 28 51	2857	26 55 37	2842	25 22 4	2829	23 48 14	2814
	SUN	E.	61 29 40	2749	59 54 5	2729	58 18 4	2709	56 41 36	2689
3	Jupiter	W.	97 49 10	2231	99 36 51	2214	101 24 58	2196	103 13 31	2178
	Mars	W.	87 51 23	2221	89 39 19	2204	91 27 41	2186	93 16 30	2168
	SUN	E.	48 32 52	2596	46 53 52	2578	45 14 27	2561	43 34 39	2543
4	Saturn	W.	24 24 4	2166	26 13 22	2149	28 3 7	2132	29 53 17	2115
	SUN	E.	35 10 12	2473	33 28 21	2462	31 46 14	2452	30 3 53	2442
8	SUN	W.	- - -	- - -	- - -	- - -	25 35 51	2401	27 19 25	2381
	α Pegasi	E.	47 36 13	2740	46 0 26	2798	44 25 56	2863	42 52 50	2928
	α Arietis	E.	86 38 58	2070	84 47 13	2080	82 55 43	2090	81 4 29	2100
9	SUN	W.	35 55 13	2445	37 37 44	2457	39 19 57	2470	41 1 52	2482
	α Arietis	E.	71 53 5	2170	70 3 53	2186	68 15 5	2203	66 26 42	2219
	Aldebaran	E.	102 11 16	2137	100 21 13	2151	98 31 31	2165	96 42 11	2179
10	SUN	W.	49 26 12	2564	51 5 57	2581	52 45 18	2599	54 24 15	2617
	α Arietis	E.	57 31 34	2318	55 46 0	2339	54 0 57	2361	52 16 26	2383
	Aldebaran	E.	87 41 18	2261	85 54 21	2278	84 7 49	2296	82 21 43	2313
11	SUN	W.	62 32 40	2711	64 9 5	2731	65 45 3	2750	67 20 36	2769
	Fomalhaut	W.	27 45 32	3314	29 9 27	3334	30 34 56	3168	32 1 43	3188
	α Arietis	E.	43 42 29	2512	42 1 33	2540	40 21 16	2571	38 41 41	2602
	Aldebaran	E.	73 37 57	2408	71 54 34	2427	70 11 38	2447	68 29 10	2467
12	SUN	W.	75 11 56	2867	76 44 57	2887	78 17 33	2906	79 49 44	2926
	Fomalhaut	W.	39 28 1	2974	40 58 46	2962	42 29 47	2953	44 0 59	2944
	α Arietis	E.	30 35 36	2798	29 1 6	2849	27 27 42	2906	25 55 31	2963
	Aldebaran	E.	60 3 43	2566	58 24 1	2585	56 44 46	2606	55 5 59	2626
13	SUN	W.	87 24 44	3017	88 54 36	3035	90 24 6	3052	91 53 14	3070
	Fomalhaut	W.	51 38 4	2946	53 9 25	2949	54 40 42	2954	56 11 53	2959
	α Pegasi	W.	35 37 25	3901	36 50 44	3823	38 5 22	3758	39 21 8	3683
	Aldebaran	E.	46 58 57	2729	45 22 55	2750	43 47 21	2771	42 12 15	2792
	Jupiter	E.	115 1 37	2623	113 23 13	2638	111 45 10	2654	110 7 28	2670
14	SUN	W.	99 13 46	3151	100 40 54	3167	102 7 43	3181	103 34 15	3195
	Fomalhaut	W.	63 45 46	2995	65 16 5	3004	66 46 13	3012	68 16 11	3020
	α Pegasi	W.	45 52 35	3516	47 12 42	3492	48 33 15	3471	49 54 11	3450
	Aldebaran	E.	34 24 3	2910	32 51 57	2936	31 20 24	2965	29 49 27	2994
	Pollux	E.	77 39 58	2772	76 4 53	2786	74 30 7	2799	72 55 38	2812
	Jupiter	E.	102 3 59	2741	100 28 14	2755	98 52 47	2768	97 17 37	2781
	Mars	E.	111 27 16	2690	109 50 23	2703	108 13 47	2716	106 37 28	2729
15	SUN	W.	110 42 40	3264	112 7 34	3277	113 32 13	3288	114 56 38	3300

MEAN TIME.

LUNAR DISTANCES.

Star's Name and Position.		Midnight.	P. L. of diff.	XV ^b .	P. L. of diff.	XVIII ^b .	P. L. of diff.	XXI ^b .	P. L. of diff.
		° ' "		° ' "		° ' "		° ' "	
piter	W.	76 52 19	2457	78 34 33	2438	80 17 14	2418	82 0 23	2399
rs	W.	66 52 35	2453	68 34 55	2433	70 17 43	2413	72 0 59	2393
gulus	W.	66 6 11	2488	67 47 41	2469	69 29 38	2449	71 12 3	2429
nus	E.	34 38 18	2924	33 6 29	2906	31 34 18	2889	30 1 45	2873
n	E.	67 47 37	2829	66 13 47	2809	64 39 31	2789	63 4 49	2769
piter	W.	90 42 56	2304	92 28 49	2286	94 15 9	2268	96 1 56	2249
rs	W.	80 44 19	2297	82 30 23	2278	84 16 55	2259	86 3 55	2240
gulus	W.	79 51 1	2335	81 36 10	2316	83 21 46	2296	85 7 51	2276
nus	E.	22 14 9	2808	20 39 52	2802	19 5 27	2799	17 30 58	2799
n	E.	55 4 43	2670	53 27 23	2652	51 49 38	2633	50 11 28	2614
piter	W.	105 2 29	2163	106 51 52	2147	108 41 40	2132	110 31 51	2117
rs	W.	95 5 46	2151	96 55 28	2134	98 45 35	2118	100 36 7	2102
n	E.	41 54 27	2529	40 13 54	2514	38 33 0	2499	36 51 45	2486
urn	W.	31 43 52	2101	33 34 50	2087	35 26 10	2073	37 17 50	2059
n	E.	28 21 19	2436	26 38 35	2430	- - -	- - -	- - -	- - -
n	W.	29 2 52	2409	30 46 14	2415	32 29 28	2424	34 12 28	2435
egasi	E.	41 21 17	3017	39 51 26	3109	38 23 28	3215	36 57 36	3332
rietis	E.	79 13 33	2114	77 22 55	2127	75 32 37	2141	73 42 40	2155
n	W.	42 43 27	2499	44 24 41	2514	46 5 34	2531	47 46 4	2547
rietis	E.	64 38 44	2239	62 51 14	2258	61 4 12	2277	59 17 38	2297
lebaran	E.	94 53 13	2195	93 4 38	2211	91 16 27	2227	89 28 40	2244
n	W.	56 2 47	2636	57 40 53	2655	59 18 34	2673	60 55 50	2692
rietis	E.	50 32 29	2408	48 49 5	2432	47 6 16	2458	45 24 4	2485
lebaran	E.	80 36 4	2333	78 50 52	2351	77 6 6	2370	75 21 48	2389
n	W.	68 55 43	2790	70 30 24	2809	72 4 40	2828	73 38 31	2848
malhaut	W.	33 29 34	3073	34 58 16	3039	36 27 40	3013	37 57 37	2991
rietis	E.	37 2 50	2637	35 24 45	2673	33 47 29	2712	32 11 5	2753
lebaran	E.	66 47 9	2486	65 5 36	2505	63 24 30	2526	61 43 53	2545
n	W.	81 21 31	2944	82 52 54	2962	84 23 54	2981	85 54 31	3000
malhaut	W.	45 32 19	2942	47 3 44	2941	48 35 11	2941	50 6 38	2942
rietis	E.	24 24 40	3043	22 55 20	3128	21 27 44	3229	20 2 9	3351
lebaran	E.	53 27 40	2646	51 49 48	2666	50 12 23	2687	48 35 26	2708
n	W.	93 22 1	3087	94 50 27	3103	96 18 33	3119	97 46 19	3135
malhaut	W.	57 42 57	2965	59 13 53	2973	60 44 40	2980	62 15 18	2988
egasi	W.	40 37 54	3652	41 53 32	3611	43 13 55	3574	44 32 58	3543
lebaran	E.	40 37 37	2814	39 28 28	2838	37 29 50	2862	35 56 41	2885
piter	E.	108 30 6	2684	106 5 5	2699	105 16 24	2714	103 40 2	2728
n	W.	105 0 29	3216	106 5 5	3224	107 52 7	3238	109 17 31	3251
malhaut	W.	69 45 58	3038	71 1 1	3038	72 45 0	3047	74 14 14	3056
egasi	W.	51 15 2	3476	52 15 1	3476	53 58 46	3416	55 20 45	3407
lebaran	E.	28 19 8	3003	29 19 8	3003	25 20 34	3103	23 52 28	3149
lux	E.	71 21 4	2888	72 21 4	2888	68 13 54	2850	66 40 31	2862
piter	E.	95 42 8	2706	96 42 8	2706	92 33 49	2818	90 59 45	2830
rs	E.	105 1 8	2732	106 1 8	2732	101 50 9	2764	100 14 54	2775
n	W.	116 20		117 20		119 8 32	3335	119 5	3344

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	
		° ' "		° ' "		° ' "		° ' "	
15	Fomalhaut W.	75 43 18	3065	77 12 11	3073	78 40 53	3082	80 9 24	
	α Pegasi W.	56 42 54	3399	58 5 12	3393	59 27 37	3387	60 50 8	
	Pollux E.	65 7 24	2874	63 34 32	2885	62 1 54	2896	60 29 30	
	Jupiter E.	89 25 56	2841	87 52 22	2852	86 19 1	2863	84 45 54	
	Mars E.	98 39 53	2785	97 5 6	2796	95 30 33	2806	93 56 13	
16	SUN W.	121 55 25	3354	123 18 34	3364	124 41 32	3374	126 4 18	
	α Pegasi W.	67 43 39	3373	69 6 26	3372	70 29 14	3373	71 52 1	
	α Arietis W.	24 5 44	3371	25 28 34	3334	26 52 6	3305	28 16 12	
	Pollux E.	52 50 42	2954	51 19 32	2962	49 48 32	2970	48 17 42	
	Jupiter E.	77 3 30	2920	75 31 36	2928	73 59 52	2935	72 28 18	
	Mars E.	86 7 32	2859	84 34 20	2866	83 1 18	2874	81 28 26	
17	α Arietis W.	35 22 19	3210	36 48 16	3202	38 14 24	3195	39 40 39	
	Pollux E.	40 45 52	3013	39 15 55	3019	37 46 6	3025	36 16 24	
	Jupiter E.	64 52 49	2977	63 22 8	2983	61 51 34	2989	60 21 7	
	Mars E.	73 46 7	2910	72 14 1	2916	70 42 2	2920	69 10 9	
	Regulus E.	77 18 44	3020	75 48 56	3026	74 19 15	3031	72 49 41	
18	α Arietis W.	46 53 20	3171	48 20 4	3168	49 46 51	3167	51 13 40	
	Aldebaran W.	17 12 42	3542	18 32 20	3472	19 53 15	3419	21 15 10	
	Jupiter E.	52 50 29	3018	51 20 38	3022	49 50 53	3026	48 21 12	
	Mars E.	61 32 2	2943	60 0 38	2946	58 29 17	2949	56 58 0	
	Regulus E.	65 23 25	3059	63 54 25	3063	62 25 30	3067	60 56 40	
19	α Arietis W.	58 28 14	3158	59 55 14	3157	61 22 15	3155	62 49 18	
	Aldebaran W.	28 14 28	3252	29 39 36	3237	31 5 1	3225	32 30 41	
	Jupiter E.	40 53 54	3047	39 24 39	3050	37 55 28	3053	36 26 21	
	Mars E.	49 22 11	2959	47 51 7	2960	46 20 4	2961	44 49 2	
	Regulus E.	53 33 26	3084	52 4 57	3087	50 36 31	3088	49 8 7	
20	α Arietis W.	70 4 52	3148	71 32 4	3147	72 59 17	3146	74 26 31	
	Aldebaran W.	39 41 49	3174	41 8 29	3168	42 35 16	3163	44 2 9	
	Jupiter E.	29 1 49	3075	27 33 9	3081	26 4 36	3087	24 36 10	
	Mars E.	37 14 3	2962	35 43 3	2962	34 12 3	2961	32 41 1	
	Regulus E.	41 46 45	3100	40 18 36	3101	38 50 28	3103	37 22 22	
	Saturn E.	119 48 11	3102	118 20 4	3101	116 51 56	3101	115 23 48	
21	α Arietis W.	81 43 10	3137	83 10 35	3134	84 38 3	3133	86 5 32	
	Aldebaran W.	51 17 57	3137	52 45 22	3133	54 12 52	3129	55 40 27	
	Spica ♀ E.	83 57 8	3075	82 28 28	3074	80 59 47	3073	79 31 5	
	Saturn E.	108 2 53	3096	106 34 38	3094	105 6 21	3093	103 38 3	
22	Aldebaran W.	62 59 26	3107	64 27 27	3103	65 55 33	3100	67 23 43	
	Pollux W.	18 43 36	3074	20 12 17	3069	21 41 4	3064	23 9 57	
	Spica ♀ E.	72 7 1	3062	70 38 5	3060	69 9 6	3057	67 40 4	
	Saturn E.	96 15 55	3080	94 47 21	3078	93 18 44	3075	91 50 4	
23	Aldebaran W.	74 45 46	3074	76 14 27	3071	77 43 12	3067	79 12 2	
	Pollux W.	30 35 44	3038	32 5 10	3034	33 34 41	3029	35 4 18	
	Spica ♀ E.	60 14 1	3039	58 44 37	3036	57 15 9	3032	55 45 36	
	Saturn E.	84 25 47	3056	82 56 43	3052	81 27 34	3048	79 58 21	
24	Pollux W.	42 33 51	2999	44 4 5	2993	45 34 26	2987	47 4 55	
	Jupiter W.	19 43 28	3038	21 12 54	3022	22 42 40	3006	24 12 45	

MEAN TIME.

LUNAR DISTANCES.

the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^b .	P. L. of diff.	XVIII ^b .	P. L. of diff.	XXI ^b .	P. L. of diff.
		° ' "		° ' "		° ' "		° ' "	
5	Fomalhaut W.	81 37 45	3100	83 5 55	3108	84 33 55	3116	86 1 45	3124
	α Pegasi W.	62 12 44	3379	63 35 24	3377	64 58 7	3375	66 20 52	3373
	Pollux E.	58 57 20	2916	57 25 22	2927	55 53 37	2936	54 22 4	2945
	Jupiter E.	83 13 1	2883	81 40 20	2893	80 7 52	2902	78 35 35	2911
	Mars E.	92 22 5	2825	90 48 10	2834	89 14 26	2843	87 40 54	2851
6	Sun W.	127 26 55	3392	128 49 21	3401	- - -	- - -	- - -	- - -
	α Pegasi W.	73 14 48	3374	74 37 34	3376	76 0 18	3377	77 23 1	3379
	α Arietis W.	29 40 46	3261	31 5 43	3244	32 31 0	3231	33 56 33	3220
	Pollux E.	46 47 2	2985	45 16 31	2993	43 46 9	3000	42 15 56	3007
	Jupiter E.	70 56 55	2951	69 25 41	2958	67 54 35	2965	66 23 38	2971
	Mars E.	79 55 42	2887	78 23 7	2893	76 50 39	2899	75 18 19	2905
7	α Arietis W.	41 7 1	3184	42 33 29	3180	44 0 2	3177	45 26 39	3173
	Pollux E.	34 46 49	3036	33 17 21	3040	31 47 58	3046	30 18 42	3051
	Jupiter E.	58 50 48	3000	57 20 35	3004	55 50 27	3009	54 20 25	3014
	Mars E.	67 38 22	2929	66 6 40	2933	64 35 3	2936	63 3 30	2940
	Regulus E.	71 20 14	3043	69 50 54	3047	68 21 39	3051	66 52 29	3056
8	α Arietis W.	52 40 30	3163	54 7 23	3161	55 34 19	3160	57 1 16	3159
	Aldebaran W.	22 37 54	3341	24 1 18	3312	25 25 15	3288	26 49 40	3269
	Jupiter E.	46 51 36	3033	45 22 4	3036	43 52 36	3040	42 23 13	3043
	Mars E.	55 26 45	2953	53 55 33	2954	52 24 23	2957	50 53 16	2958
	Regulus E.	59 27 54	3073	57 59 12	3076	56 30 33	3079	55 1 58	3082
9	α Arietis W.	64 16 22	3153	65 43 28	3152	67 10 34	3151	68 37 42	3149
	Aldebaran W.	33 56 34	3204	35 22 38	3195	36 48 53	3188	38 15 17	3181
	Jupiter E.	34 57 18	3060	33 28 19	3063	31 59 24	3067	30 30 34	3071
	Mars E.	43 18 2	2962	41 47 2	2962	40 16 2	2963	38 45 3	2962
	Regulus E.	47 39 45	3093	46 11 27	3095	44 43 11	3096	43 14 57	3098
0	α Arietis W.	75 53 47	3142	77 21 6	3142	78 48 25	3140	80 15 46	3138
	Aldebaran W.	45 29 8	3154	46 56 12	3149	48 23 22	3145	49 50 37	3141
	Jupiter E.	23 7 52	3102	21 39 45	3112	20 11 50	3124	18 44 9	3138
	Mars E.	31 9 59	2960	29 38 56	2958	28 7 51	2957	26 36 45	2955
	Regulus E.	35 54 19	3107	34 26 18	3109	32 58 20	3111	31 30 24	3113
	Saturn E.	113 55 39	3100	112 27 29	3099	110 59 18	3098	109 31 6	3097
1	α Arietis W.	87 33 4	3129	89 0 38	3127	90 28 15	3125	91 55 54	3123
	Aldebaran W.	57 8 6	3122	58 35 49	3118	60 3 37	3114	61 31 29	3110
	Spica η E.	78 2 21	3069	76 33 34	3068	75 4 45	3066	73 35 54	3064
	Saturn E.	102 9 42	3089	100 41 19	3087	99 12 53	3085	97 44 25	3083
2	Aldebaran W.	68 51 58	3092	70 20 17	3087	71 48 42	3084	73 17 11	3079
	Pollux E.	24 38 55	3056	26 7 59	3051	27 37 9	3047	29 6 24	3043
	Spica η E.	66 10 58	3051	64 41 49	3049	63 12 37	3046	61 43 21	3043
	Saturn E.	90 21 20	3069	88 52 33	3066	87 23 42	3063	85 54 47	3059
3	Aldebaran W.	80 40 58	3057	82 10 0	3053	83 39 7	3048	85 8 21	3043
	Pollux W.	36 34 0	3020	38 3 48	3014	39 33 43	3009	41 3 44	3004
	Spica η E.	54 15 59	3025	52 46 17	3020	51 16 29	3017	49 46 37	3012
	Saturn E.	78 29 2	3039	76 59 38	3035	75 30 8	3031	74 0 33	3026
4	Pollux W.	48 35 30	2976	50 6 13	2970	51 37 4	296	52 37 29	2957
	Jupiter W.	25 43 6	2981	27 13 43	2970	28 44 34	296		

MEAN TIME.												
LUNAR DISTANCES.												
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	P. L. of diff.	XII ^h .	P. L. of diff.	XV ^h .
		° ' "		° ' "		° ' "		° ' "		° ' "		° ' "
24	Spica ♏	E. 48 16 39	3008	46 46 36	3002	45 16 26	2998	43 46 11	2994	42 16 01	2990	40 46 51
	Saturn	E. 72 30 52	3020	71 1 4	3015	69 31 10	3010	68 1 9	3005	66 31 0	3000	64 31 0
	Venus	E. 122 16 12	3490	120 55 37	3483	119 34 54	3477	118 14 4	3470	116 54 3	3463	115 34 3
25	Pollux	W. 54 39 10	2949	56 10 27	2942	57 41 52	2935	59 13 26	2928	60 25 0	2921	61 46 26
	Jupiter	W. 31 46 57	2988	33 18 28	2928	34 50 11	2918	36 22 7	2908	37 43 0	2898	39 14 0
	Mars	W. 24 5 44	2820	25 39 46	2816	27 13 53	2809	28 48 10	2802	29 22 17	2795	30 46 24
	Spica ♏	E. 36 13 20	2967	34 42 26	2962	33 11 26	2957	31 40 19	2952	30 9 12	2947	29 18 5
	Saturn	E. 60 29 17	2973	58 58 30	2966	57 27 35	2959	55 56 31	2952	54 25 26	2945	52 54 21
	Venus	E. 111 27 55	3433	110 6 16	3424	108 44 27	3416	107 22 29	3408	105 40 30	3400	104 18 31
26	Pollux	W. 66 53 53	2885	68 26 31	2876	69 59 21	2866	71 32 23	2857	72 55 25	2847	74 28 27
	Jupiter	W. 44 4 57	2859	45 38 9	2849	47 11 34	2838	48 45 13	2828	49 18 12	2817	50 51 11
	Mars	W. 36 42 13	2758	38 17 36	2749	39 53 11	2739	41 28 59	2729	42 53 57	2719	44 28 55
	Regulus	W. 30 35 7	2926	32 6 53	2913	33 38 55	2901	35 11 13	2889	36 43 31	2877	38 15 49
	Saturn	E. 48 18 49	2912	46 46 45	2904	45 14 31	2895	43 42 6	2886	42 10 2	2877	40 37 58
	Antares	E. 69 47 0	2885	68 14 22	2876	66 41 33	2867	65 8 32	2857	63 35 31	2848	61 22 30
	Venus	E. 100 30 4	3361	99 7 3	3350	97 43 49	3339	96 20 23	3328	94 6 47	3317	92 53 21
	SUN	E. 128 17 11	3283	126 52 40	3271	125 27 55	3261	124 2 58	3250	122 38 1	3239	120 23 5
27	Jupiter	W. 56 36 56	2772	58 12 1	2760	59 47 22	2747	61 22 59	2734	62 48 36	2721	64 24 13
	Mars	W. 49 31 17	2677	51 8 28	2666	52 45 54	2654	54 23 36	2642	55 51 18	2630	57 29 0
	Regulus	W. 42 56 42	2825	44 30 37	2813	46 4 48	2801	47 39 15	2789	48 53 42	2777	50 28 19
	Saturn	E. 35 57 3	2839	34 23 26	2829	32 49 36	2819	31 15 33	2808	29 41 30	2798	28 17 27
	Antares	E. 57 20 10	2804	55 45 48	2794	54 11 12	2782	52 36 20	2771	50 11 17	2760	48 46 25
	Venus	E. 89 19 59	3270	87 55 12	3258	86 30 11	3244	85 4 54	3232	83 29 7	3220	81 18 51
	SUN	E. 116 54 45	3188	115 28 22	3176	114 1 44	3163	112 34 50	3150	110 23 5	3138	108 13 0
28	Jupiter	W. 69 25 14	2670	71 2 34	2657	72 40 12	2643	74 18 9	2629	75 46 36	2615	77 24 3
	Mars	W. 62 36 16	2578	64 15 41	2564	65 55 25	2551	67 35 27	2537	68 55 29	2523	70 15 31
	Regulus	W. 55 35 54	2719	57 12 9	2705	58 48 43	2690	60 25 36	2675	61 51 38	2660	63 27 40
	Antares	E. 44 38 2	2707	43 1 31	2694	41 24 43	2680	39 47 37	2665	38 10 30	2651	36 43 24
	Venus	E. 77 54 30	3161	76 27 34	3146	75 0 20	3131	73 32 48	3116	71 58 5	3101	70 24 1
	SUN	E. 105 16 11	3078	103 47 34	3063	102 18 39	3048	100 49 25	3033	99 19 30	3018	97 49 16
29	Jupiter	W. 82 32 53	2554	84 12 51	2538	85 53 11	2522	87 33 53	2506	88 54 35	2490	90 15 17
	Mars	W. 76 0 37	2464	77 42 41	2448	79 25 7	2433	81 7 55	2417	82 29 3	2401	83 52 1
	Regulus	W. 68 35 0	2599	70 13 56	2584	71 53 13	2568	73 32 52	2552	75 12 30	2536	76 51 8
	Antares	E. 31 37 22	2595	29 58 21	2580	28 18 59	2566	26 39 17	2551	24 59 15	2536	23 19 13
	Venus	E. 66 10 23	3035	64 40 54	3018	63 11 4	3001	61 40 53	2984	59 50 1	2967	58 19 9
	SUN	E. 93 18 22	2950	91 47 7	2934	90 15 31	2917	88 43 34	2900	86 31 37	2883	84 19 40
30	Jupiter	W. 96 2 53	2427	97 45 50	2410	99 29 11	2394	101 12 55	2377	102 36 39	2360	103 50 23
	Mars	W. 89 47 34	2337	91 32 40	2320	93 18 10	2304	95 4 3	2287	96 29 26	2270	98 15 52
	Spica ♏	W. 27 56 10	2488	29 37 40	2469	31 19 37	2449	33 2 2	2429	34 14 58	2409	35 27 54
	Venus	E. 54 4 41	2899	52 32 21	2882	50 59 39	2865	49 26 35	2848	47 53 31	2831	46 20 27
	SUN	E. 80 58 15	2812	79 24 3	2795	77 49 28	2776	76 14 29	2757	74 43 25	2738	73 12 21
31	Jupiter	W. 109 57 28	2295	111 43 35	2279	113 30 5	2264	115 16 58	2248	116 53 54	2232	118 30 50
	Mars	W. 103 59 34	2206	105 47 53	2189	107 36 37	2173	109 25 45	2156	110 54 41	2139	112 43 37
	Spica ♏	W. 41 40 42	2339	43 25 44	2322	45 11 12	2304	46 57 5	2287	48 43 1	2270	50 28 57
	Saturn	W. 17 16 9	2411	18 59 28	2382	20 43 28	2357	22 28 5	2331	24 18 1	2305	25 52 27
	Venus	E. 41 35 48	2765	40 0 34	2749	38 24 59	2734	36 49 4	2718	34 24 0	2702	32 58 56
	SUN	E. 68 13 43	2669	66 36 22	2652	64 58 38	2635	63 20 31	2618	61 31 27	2601	59 42 23

MEAN TIME.

LUNAR DISTANCES.

the Month.	Star's Name and Position.		Midnight.	P. L. of diff.	XV ^b .	P. L. of diff.	XVIII ^b .	P. L. of diff.	XXI ^b .	P. L. of diff.
			° ' "		° ' "		° ' "		° ' "	
4	Spica π	E.	42 15 49	2989	40 45 22	2983	39 14 48	2977	37 44 7	2973
	Saturn	E.	66 31 2	2999	65 0 47	2993	63 30 25	2986	61 59 55	2980
	Venus	E.	116 53 6	3463	115 32 1	3455	114 10 47	3448	112 49 25	3441
5	Pollux	W.	60 45 11	2920	62 17 5	2911	63 49 10	2902	65 21 26	2894
	Jupiter	W.	37 54 16	2898	39 26 37	2888	40 59 11	2878	42 31 58	2869
	Mars	W.	30 22 37	2792	31 57 15	2785	33 32 3	2776	35 7 2	2767
	Spica π	E.	30 9 5	2946	28 37 44	2941	27 6 17	2936	25 34 44	2931
	Saturn	E.	54 25 18	2945	52 53 56	2937	51 22 24	2929	49 50 42	2920
	Venus	E.	106 0 20	3399	104 38 2	3390	103 15 34	3380	101 52 54	3371
6	Pollux	W.	73 5 38	2846	74 39 6	2837	76 12 46	2826	77 46 40	2817
	Jupiter	W.	50 19 5	2817	51 53 11	2806	53 27 31	2795	55 2 6	2783
	Mars	W.	43 4 59	2720	44 41 13	2710	46 17 40	2699	47 54 21	2688
	Regulus	W.	36 43 47	2876	38 16 36	2863	39 49 42	2851	41 23 4	2838
	Saturn	E.	42 9 29	2877	40 36 40	2868	39 3 40	2859	37 30 28	2849
	Antares	E.	63 35 18	2847	62 1 51	2837	60 28 11	2827	58 54 18	2815
	Venus	E.	94 56 45	3318	93 32 54	3306	92 8 49	3294	90 44 31	3282
	SUN	E.	122 37 47	3238	121 12 23	3226	119 46 45	3214	118 20 52	3202
7	Jupiter	W.	62 58 52	2722	64 35 2	2710	66 11 28	2697	67 48 12	2684
	Mars	W.	56 1 34	2629	57 39 49	2617	59 18 20	2604	60 57 9	2591
	Regulus	W.	49 13 59	2774	50 49 1	2760	52 24 21	2747	53 59 58	2733
	Saturn	E.	29 41 18	2800	28 6 50	2791	26 32 10	2782	24 57 19	2773
	Antares	E.	51 1 13	2758	49 25 50	2746	47 50 11	2733	46 14 15	2720
	Venus	E.	83 39 22	3218	82 13 34	3204	80 47 29	3190	79 21 8	3176
	SUN	E.	111 7 40	3135	109 40 13	3122	108 12 30	3107	106 44 29	3093
8	Jupiter	W.	75 56 26	2613	77 35 3	2599	79 13 59	2584	80 53 16	2569
	Mars	W.	69 15 48	2523	70 56 29	2508	72 37 31	2493	74 18 54	2479
	Regulus	W.	62 2 48	2661	63 40 20	2646	65 18 13	2631	66 56 26	2615
	Antares	E.	38 10 12	2652	36 32 28	2638	34 54 25	2624	33 16 3	2610
	Venus	E.	72 4 58	3100	70 36 49	3084	69 8 20	3069	67 39 32	3052
	SUN	E.	99 19 52	3017	97 50 0	3000	96 19 47	2985	94 49 15	2968
9	Jupiter	W.	89 14 56	2492	90 56 21	2475	92 38 9	2460	94 20 19	2443
	Mars	W.	82 51 6	2401	84 34 39	2386	86 18 34	2370	88 2 52	2353
	Regulus	W.	75 12 54	2535	76 53 18	2520	78 34 4	2503	80 15 13	2487
	Antares	E.	24 59 15	2538	23 18 54	2523	21 38 13	2509	19 57 13	2494
	Venus	E.	60 10 22	2968	58 39 29	2951	57 8 15	2934	55 36 39	2916
	SUN	E.	87 11 15	2883	85 38 34	2866	84 5 31	2848	82 32 5	2829
10	Jupiter	W.	102 57 2	2361	104 41 33	2345	106 26 27	2328	108 11 45	2311
	Mars	W.	96 50 21	2271	98 37 3	2258	100 24 9	2239	102 11 39	2222
	Spica π	W.	34 44 53	2412	36 28 11	2394	38 11 55	2376	39 56 6	2357
	Venus	E.	47 53 9	2831	46 19		42 3798		43 10 41	2781
	SUN	E.	74 39 7	2741	73		72 2705		69 50 39	2688
11	Jupiter	W.	117 4 15	2232	118		12201		122 28 23	2186
	Mars	W.	111 15 18	2141	113		1110		116 46 19	2095
	Spica π	W.	48 43 23	2270	50		2237		54 4 45	2222
	Saturn	W.	24 13 17	2311	25		2270		29 32 0	2251
	Venus	E.	35 12 50	270			681		30 22 22	2670
	SUN	E.	61 42						6 44 15	2553





CONFIGURATIONS OF THE SATELLITES OF JUPITER

At 12^h, MEAN TIME.

Day of the Month.	<i>West.</i>				<i>East.</i>		
1		4.	2.	○		3.	
2		4.		○	1.	3.	
3		4.		○	3.	2.	
4		4.		○	1.		
5		4.	3.	○			
6		4.	3.	○	1.	2.	
7			4.	○	2.		
8			2.	○	4.	3.	
9				○	1.		
10			1.	○	3.		4.
11			3.	○	1.		4.
12		3.	2.	○			4.
13		3.		○	1.	2.	4.
14			1.	○	2.		4.
15		2.		○	1.	4.	3.
16				○		3.	
17			4.	○	3.		
18		4.		○	1.		
19		4.	3.	○			
20		4.	3.	○	1.	2.	
21		4.		○	2.		
22		4.	2.	○	1.	3.	
23			4.	○		3.	
24	1. ○			○	2.	3.	
25				○	1.	4.	
26		3.	2.	○		4.	
27		3.		○	1.		4.
28			3.	○	2.		4.
29			2.	○	1.	3.	4.
30				○		3.	4.
31	○ 1.			○	2.	3.	4.

This Table represents, at 12^h after *Mean Noon* of each day of the month, the relative position the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page, the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the *shadow* of Jupiter.

ECLIPSES OF THE SATELLITES OF JUPITER.

TELLITE.	Day of the Month.	Mean Time.	Sidereal Time.	PHASE as seen in an inverting Telescope.	
I.	2	^{h m s} 6 55 41.2	^{h m s} 1 44 28.6	Im.	
	4	1 24 3.4	20 19 49.4	Im.	
	5	19 52 23.8	14 55 8.5	Im.	
	7*	14 20 46.7	9 30 30.0	Im.	
	9*	8 49 7.6	4 5 49.6	Im.	
	11	3 17 31.1	22 41 11.7	Im.	
	12	21 45 52.9	17 16 32.1	Im.	
	14*	16 14 17.2	11 51 55.0	Im.	
	16*	10 42 40.3	6 27 16.8	Im.	
	18	5 11 5.3	1 2 40.5	Im.	
	19	23 39 29.2	19 38 3.0	Im.	
	21*	18 7 55.0	14 13 27.5	Im.	
	23*	12 36 19.9	8 48 51.0	Im.	
	25*	7 4 46.5	3 24 16.2	Im.	
	27	1 33 12.5	21 59 40.9	Im.	
	28	20 1 39.7	16 35 6.7	Im.	
	30*	14 30 7.1	11 10 32.7	Im.	
II.	2	4 12 46.2	23 1 6.8	Im.	
	5*	17 31 28.0	12 33 49.5	Im.	
	9	6 49 5.5	2 5 27.7	Im.	
	12	20 7 52.8	15 38 15.9	Im.	
	16*	9 25 35.0	5 9 58.8	Im.	
	19	22 44 27.2	18 42 52.0	Im.	
	23*	12 2 13.8	8 14 39.3	Im.	
	27	1 21 9.5	21 47 35.9	Im.	
III.	7*	8 25 14.8	3 33 59.7	Im.	
	14*	12 23 6.4	8 0 6.3	Im.	
	21*	16 21 33.3	12 26 48.3	Im.	
	28	20 19 59.4	16 53 29.4	Im.	
IV.	7*	18 10 25.0	13 20 46.1	Im.	
	7	22 49 21.1	18 0 27.9	Em.	
	24*	12 10 1.1	8 26 24.4	Im.	

APPROXIMATE SIDEREAL TIMES
OF THE
OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER,
AND OF THE
TRANSITS OF THE SATELLITES AND THEIR SHADOWS
OVER THE DISC OF THE PLANET.

Satellite.	OCCULTATIONS.		TRANSITS OF SATELLITES.		TRANSITS OF SHADOWS.	
	Immersion.	Emersion.	Ingress.	Egress.	Ingress.	Egress.
	d h m	d h m	d h m	d h m	d h m	d h m
I.		2* 4 45 4 23 18 5 17 51 7* 12 25 9* 6 58 11 1 31 13 20 4 14* 14 36 16* 9 9 18* 3 42 20 22 15 21 16 48 23* 11 21 25* 5 53 27 0 26 28 18 59 30* 13 32	1* 5 5 3 23 39 4 18 12 6* 12 46 8* 7 19 10 1 52 12 20 25 13 14 58 15* 9 31 17* 4 4 19 22 37 20 17 10 22* 11 43 24* 6 16 26 0 49 27 19 22 29* 13 55 31* 8 28	1* 7 26 3 2 0 5 20 33 6 15 6 8* 9 39 10* 4 13 12 22 46 13 17 19 15* 11 52 17* 6 25 19 0 58 20 19 31 22* 14 4 24* 8 37 26* 3 10 28 21 43 29 16 16 31* 10 49	1* 4 22 3 22 58 4 17 33 6* 12 9 8* 6 44 10 1 20 12 19 55 13* 14 31 15* 9 6 17* 3 42 19 22 17 20 16 53 22* 11 28 24* 6 4 26 0 39 27 19 15 29* 13 51 31* 8 26	1* 1 3 5 1 6 1 8* 10* 12 2 13 1 15* 1 17* 19 20 1 22* 1 24* 8 26* 3 28 2 29 1 31* 1
II.	In the Shadow.	2* 3 24 5 16 47 9* 6 10 13 19 33 16* 8 54 20 22 17 23* 11 38 27 1 0 30* 14 21	4 19 17 7* 8 38 11 22 0 14* 11 20 18 0 41 21* 14 1 25* 3 21 28 16 41	4 22 14 7* 11 35 11 0 57 14* 14 17 18* 3 38 21 16 58 25* 6 18 28 19 38	3 17 55 7* 7 25 11 20 56 14* 10 26 18 23 58 21* 13 28 25* 2 59 28 16 30	4 20 7* 10 11 23 14* 13 18* 2 21 16 25* 5 28 19
III.	In the Shadow.	7* 9 38 14* 13 26 21 17 11 29 20 55	3 15 48 11 19 38 18 23 25 25* 3 9	4 19 32 11 23 22 18* 3 8 25* 6 53	3* 13 5 10 17 32 18 21 59 25 2 26	3 16 11 21 18 1 25* 6
IV.	7 18 49 In the Shadow.	8 23 45 24* 15 8	16 0 49	16* 5 45	16 21 7	16 1

For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^m .020613.	From Mean Noon of January 1.	
At Mean Midnight,						Day of the Year.	Fraction of the Year.
Logarithm of							
A	B	C	D		Days.		
-0.5696	+1.3000	-9.2887	-0.8330	^h 5 ^m 15 ^s 25.65	285	0	.000
0.6061	1.2984	9.2801	0.8338	5 11 29.74	286	1	.003
0.6396	1.2966	9.2714	0.8347	5 7 33.82	287	2	.005
-0.6706	+1.2947	-9.2625	-0.8356	5 3 37.91	288	3	.008
0.6994	1.2926	9.2535	0.8365	4 59 41.99	289	4	.011
0.7262	1.2904	9.2444	0.8375	4 55 46.07	290	5	.014
-0.7514	+1.2880	-9.2351	-0.8385	4 51 50.15	291	6	.016
0.7751	1.2855	9.2256	0.8395	4 47 54.24	292	7	.019
0.7974	1.2828	9.2160	0.8406	4 43 58.33	293	8	.022
-0.8184	+1.2800	-9.2062	-0.8417	4 40 2.42	294	9	.025
0.8384	1.2770	9.1962	0.8428	4 36 6.51	295	10	.027
0.8574	1.2738	9.1861	0.8439	4 32 10.60	296	11	.030
-0.8754	+1.2705	-9.1758	-0.8451	4 28 14.70	297	12	.033
0.8926	1.2670	9.1653	0.8463	4 24 18.79	298	13	.036
0.9090	1.2634	9.1546	0.8475	4 20 22.88	299	14	.038
-0.9246	+1.2596	-9.1437	-0.8488	4 16 26.96	300	15	.041
0.9396	1.2556	9.1327	0.8501	4 12 31.05	301	16	.044
0.9539	1.2515	9.1214	0.8514	4 8 35.13	302	17	.047
-0.9677	+1.2472	-9.1099	-0.8527	4 4 39.22	303	18	.049
0.9809	1.2426	9.0982	0.8540	4 0 43.30	304	19	.052
0.9935	1.2379	9.0863	0.8553	3 56 47.38	305	20	.055
-1.0057	+1.2331	-9.0741	-0.8567	3 52 51.47	306	21	.058
1.0174	1.2280	9.0617	0.8581	3 48 55.56	307	22	.060
1.0287	1.2227	9.0490	0.8595	3 44 59.65	308	23	.063
-1.0395	+1.2173	-9.0360	-0.8608	3 41 3.74	309	24	.066
1.0499	1.2116	9.0228	0.8622	3 37 7.84	310	25	.068
1.0600	1.2057	9.0094	0.8636	3 33 11.93	311	26	.071
-1.0697	+1.1996	-8.9956	-0.8650	3 29 16.02	312	27	.074
1.0791	1.1933	8.9815	0.8664	3 25 20.12	313	28	.077
1.0881	1.1867	8.9671	0.8679	3 21 24.21	314	29	.079
1.0968	1.1799	8.9524	0.8693	3 17 28.29	315	30	.082
-1.1052	+1.1729	-8.9372	-0.8707	3 13 32.38	316	31	.085

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.		
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s
Wed.	1	20 59 55.09	10.167	S. 17 4 3.6	43.20	1 8.16	13 56.97
Thur.	2	21 3 59.10	10.134	16 46 46.8	43.93	1 8.05	14 4.40
Frid.	3	21 8 2.31	10.100	16 29 12.4	44.65	1 7.94	14 11.03
Sat.	4	21 12 4.70	10.065	16 11 20.8	45.35	1 7.82	14 16.84
Sun.	5	21 16 6.26	10.031	15 53 12.5	46.03	1 7.71	14 21.83
Mon.	6	21 20 7.00	9.997	15 34 47.9	46.69	1 7.59	14 26.01
Tues.	7	21 24 6.93	9.963	15 16 7.3	47.33	1 7.47	14 29.37
Wed.	8	21 28 6.04	9.930	14 57 11.3	47.96	1 7.36	14 31.92
Thur.	9	21 32 4.35	9.896	14 38 0.3	48.57	1 7.25	14 33.67
Frid.	10	21 36 1.85	9.863	14 18 34.6	49.16	1 7.14	14 34.63
Sat.	11	21 39 58.55	9.829	13 58 54.7	49.73	1 7.03	14 34.78
Sun.	12	21 43 54.45	9.798	13 39 1.2	50.28	1 6.92	14 34.12
Mon.	13	21 47 49.59	9.765	13 18 54.4	50.82	1 6.81	14 32.71
Tues.	14	21 51 43.96	9.734	12 58 34.7	51.34	1 6.71	14 30.52
Wed.	15	21 55 37.57	9.703	12 38 2.6	51.84	1 6.61	14 27.59
Thur.	16	21 59 30.44	9.672	12 17 18.4	52.32	1 6.51	14 23.90
Frid.	17	22 3 22.57	9.643	11 56 22.7	52.79	1 6.41	14 19.48
Sat.	18	22 7 13.99	9.613	11 35 15.8	53.24	1 6.31	14 14.36
Sun.	19	22 11 4.71	9.585	11 13 58.1	53.68	1 6.21	14 8.54
Mon.	20	22 14 54.76	9.557	10 52 29.9	54.09	1 6.11	14 2.05
Tues.	21	22 18 44.13	9.531	10 30 51.7	54.49	1 6.02	13 54.90
Wed.	22	22 22 32.88	9.505	10 9 3.9	54.88	1 5.93	13 47.11
Thur.	23	22 26 20.99	9.480	9 47 6.8	55.25	1 5.84	13 38.70
Frid.	24	22 30 8.51	9.456	9 25 0.7	55.61	1 5.75	13 29.69
Sat.	25	22 33 55.45	9.432	9 2 46.1	55.95	1 5.66	13 20.11
Sun.	26	22 37 41.82	9.410	8 40 23.4	56.27	1 5.58	13 9.95
Mon.	27	22 41 27.66	9.388	8 17 52.9	56.58	1 5.50	12 59.26
Tues.	28	22 45 12.96	9.367	7 55 15.0	56.87	1 5.42	12 48.04
Wed.	29	22 48 57.77		S. 7 32 30.2		1 5.34	12 36.31

* Mean Time of the Semidiameter passing may be found by subtracting 0^s 18 from the *Sider.*

AT MEAN NOON.

	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Right Ascension.	Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
ed.	1	20 59 52.72	S. 17 4 13.5	16 14.8	13 56.89	20 45 55.83
ur.	2	21 3 56.72	16 46 57.0	16 14.6	14 4.33	20 49 52.39
id.	3	21 7 59.92	16 29 22.8	16 14.5	14 10.97	20 53 48.95
t.	4	21 12 2.30	16 11 31.5	16 14.3	14 16.79	20 57 45.51
n.	5	21 16 3.85	15 53 23.4	16 14.1	14 21.78	21 1 42.07
on.	6	21 20 4.59	15 34 59.0	16 14.0	14 25.97	21 5 38.62
es.	7	21 24 4.52	15 16 18.7	16 13.8	14 29.34	21 9 35.18
ed.	8	21 28 3.63	14 57 22.9	16 13.6	14 31.90	21 13 31.73
ur.	9	21 32 1.94	14 38 12.0	16 13.4	14 33.66	21 17 28.28
id.	10	21 35 59.45	14 18 46.4	16 13.2	14 34.62	21 21 24.83
t.	11	21 39 56.16	13 59 6.7	16 13.1	14 34.78	21 25 21.38
n.	12	21 43 52.07	13 39 13.4	16 12.9	14 34.13	21 29 17.94
on.	13	21 47 47.22	13 19 6.6	16 12.7	14 32.73	21 33 14.49
es.	14	21 51 41.60	12 58 47.1	16 12.5	14 30.55	21 37 11.05
ed.	15	21 55 35.23	12 38 15.0	16 12.3	14 27.62	21 41 7.61
ur.	16	21 59 28.11	12 17 30.9	16 12.1	14 23.94	21 45 4.17
id.	17	22 3 20.26	11 56 35.3	16 11.9	14 19.53	21 49 0.73
t.	18	22 7 11.70	11 35 28.4	16 11.7	14 14.41	21 52 57.29
n.	19	22 11 2.45	11 14 10.7	16 11.4	14 8.60	21 56 53.85
on.	20	22 14 52.52	10 52 42.5	16 11.2	14 2.12	22 0 50.40
es.	21	22 18 41.92	10 31 4.3	16 11.0	13 54.97	22 4 46.95
ed.	22	22 22 30.69	10 9 16.4	16 10.8	13 47.19	22 8 43.50
ur.	23	22 26 18.83	9 47 19.3	16 10.5	13 38.78	22 12 40.05
id.	24	22 30 6.38	9 25 13.1	16 10.3	13 29.78	22 16 36.60
t.	25	22 33 53.35	9 2 58.5	16 10.1	13 20.20	22 20 33.15
n.	26	22 37 39.75	8 40 35.7	16 9.8	13 10.05	22 24 29.70
on.	27	22 41 25.62	8 18 5.1	16 9.6	12 59.36	22 28 26.26
es.	28	22 45 10.96	7 55 27.1	16 9.3	12 48.14	22 32 22.82
ed.	29	22 48 55.80	S. 7 32 42.1	16 9.1	12 36.42	22 36 19.38

Noon may be assumed the same as that for *Mean Noon*.

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Paral.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Mid.
1	312 30 1 9	S. 0 59	9 9937760	16 18 3	16 24 3	59 49 9	60 1
2	313 30 53 6	0 67	9 9938471	16 29 8	16 34 4	60 32 4	60 4
3	314 31 44 4	0 72	9 9939195	16 37 9	16 40 3	61 2 2	61 1
4	315 32 33 9	0 74	9 9939931	16 41 4	16 41 1	61 14 7	61 1
5	316 33 22 2	0 74	9 9940681	16 39 5	16 36 5	61 7 7	60 5
6	317 34 9 2	0 70	9 9941442	16 32 4	16 27 2	60 41 8	60 2
7	318 34 54 8	0 63	9 9942215	16 21 0	16 14 1	60 0 0	59 3
8	319 35 38 9	0 54	9 9943001	16 6 6	15 58 8	59 7 3	58 3
9	320 36 21 6	0 44	9 9943797	15 50 8	15 42 9	58 9 2	57 4
10	321 37 2 7	0 31	9 9944608	15 35 1	15 27 6	57 11 5	56 4
11	322 37 42 2	0 17	9 9945432	15 20 6	15 14 0	56 18 4	55 5
12	323 38 19 8	S. 0 03	9 9946270	15 8 2	15 2 9	55 32 7	55 1
13	324 38 55 8	N. 0 10	9 9947126	14 58 2	14 54 2	54 56 1	54 4
14	325 39 30 0	0 22	9 9947998	14 50 8	14 48 1	54 28 9	54 1
15	326 40 2 6	0 31	9 9948886	14 45 9	14 44 4	54 11 0	54
16	327 40 33 3	0 39	9 9949793	14 43 4	14 42 9	54 1 7	53 5
17	328 41 2 1	0 44	9 9950719	14 42 8	14 43 3	53 59 8	54
18	329 41 29 2	0 45	9 9951665	14 44 2	14 45 5	54 4 8	54
19	330 41 54 6	0 44	9 9952630	14 47 0	14 48 9	54 15 1	54 2
20	331 42 18 2	0 40	9 9953616	14 51 2	14 53 7	54 30 4	54 3
21	332 42 40 1	0 33	9 9954622	14 56 5	14 59 5	54 49 9	55
22	333 43 0 4	0 24	9 9955647	15 2 8	15 6 3	55 13 0	55 2
23	334 43 19 1	0 13	9 9956689	15 10 1	15 14 0	55 39 7	55 5
24	335 43 36 4	N. 0 01	9 9957750	15 18 3	15 22 7	56 9 8	56 2
25	336 43 52 0	S. 0 13	9 9958825	15 27 4	15 32 2	56 43 1	57
26	337 44 6 2	0 25	9 9959916	15 37 3	15 42 6	57 19 7	57 3
27	338 44 19 0	0 37	9 9961019	15 48 0	15 53 5	57 58 9	58 1
28	339 44 30 4	0 47	9 9962135	15 58 9	16 4 4	58 39 0	58 5
29	340 44 40 3	S. 0 56	9 9963260	16 9 6	16 14 6	59 18 3	59 3

MEAN TIME.

Day of the Week.	Day of the Month.	THE MOON'S							
		Longitude.		Latitude.		Age.		Meridian	
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.		
		° ' "	° ' "	° ' "	° ' "	d	h m		
ed.	1	257 29 54.2	264 46 25.6	S. 3 21 7.8	S. 3 47 54.1	25.5	21 12.5		
ur.	2	272 9 0.1	279 36 58.9	4 11 14.0	4 30 33.2	26.5	22 18.8		
id.	3	287 9 27.0	294 45 19.3	4 45 21.9	4 55 14.6	27.5	23 24.4		
t.	4	302 23 17.4	310 1 58.1	4 59 54.2	4 59 12.9	28.5	♂		
on.	5	317 39 52.6	325 15 35.1	4 53 10.5	4 41 58.3	0.1	0 26.1		
on.	6	332 47 43.1	340 15 4.0	4 25 54.4	4 5 25.7	1.1	1 23.0		
es.	7	347 36 36.3	354 51 33.4	3 41 4.5	3 13 27.2	2.1	2 15.2		
ed.	8	1 59 21.4	8 59 41.5	2 43 10.9	2 10 54.7	3.1	3 4.0		
ur.	9	15 52 28.1	22 37 47.1	1 37 14.7	S. 1 2 45.8	4.1	3 50.7		
id.	10	29 15 53.9	35 47 12.8	S. 0 27 59.9	N. 0 6 34.1	5.1	4 36.6		
t.	11	42 12 13.1	48 31 28.8	N. 0 40 30.8	1 13 28.0	6.1	5 22.9		
n.	12	54 45 37.0	60 55 16.1	1 45 5.2	2 15 5.6	7.1	6 10.4		
on.	13	67 1 4.7	73 3 41.0	2 43 13.1	3 9 15.2	8.1	6 59.5		
es.	14	79 3 43.4	85 1 46.1	3 32 58.8	3 54 13.4	9.1	7 50.0		
ed.	15	90 58 23.1	96 54 5.0	4 12 49.2	4 28 37.4	10.1	8 41.2		
ur.	16	102 49 20.4	108 44 34.3	4 41 29.7	4 51 19.8	11.1	9 32.2		
id.	17	114 40 8.7	120 36 23.3	4 58 1.4	5 1 30.2	12.1	10 21.9		
t.	18	126 33 34.7	132 31 56.5	5 1 42.0	4 58 35.8	13.1	11 9.5		
n.	19	138 31 40.5	144 32 55.9	4 52 10.0	4 42 27.5	14.1	11 55.0		
on.	20	150 35 51.3	156 40 33.1	4 29 30.6	4 13 25.1	15.1	12 38.4		
es.	21	162 47 8.0	168 55 42.0	3 54 18.3	3 32 20.7	16.1	13 20.4		
ed.	22	175 6 22.2	181 19 16.6	3 7 43.7	2 40 41.2	17.1	14 1.8		
ur.	23	187 34 34.5	193 52 26.5	2 11 29.6	1 40 26.9	18.1	14 43.7		
id.	24	200 13 6.3	206 36 47.8	N. 1 7 53.0	N. 0 34 9.8	19.1	15 27.2		
t.	25	213 3 48.6	219 34 25.3	S. 0 0 19.4	S. 0 35 9.7	20.1	16 13.5		
on.	26	226 8 57.4	232 47 43.2	1 9 54.1	1 44 5.5	21.1	17 3.8		
on.	27	239 31 1.1	246 19 4.8	2 17 14.3	2 48 50.7	22.1	17 58.9		
ues.	28	253 12 8.7	260 10 18.9	3 18 23.9	3 45 22.3	23.1	18 58.7		
ed.	29	267 13 37.6	274 21 58.9	S. 4 9 15.1	S. 4 29 33.3	24.1	20 1.9		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.
WEDNESDAY 1.				FRIDAY 3.		
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]
0	17 4 14.98	S. 26 12 40.7	57.22	0	19 17 6.99	S. 27 4 35.4
1	17 6 54.18	26 18 24.0	55.45	1	19 19 55.58	27 0 31.7
2	17 9 33.82	26 23 56.7	53.65	2	19 22 44.06	26 56 15.7
3	17 12 13.89	26 29 18.6	51.85	3	19 25 32.41	26 51 46.7
4	17 14 54.40	26 34 29.7	50.02	4	19 28 20.62	26 47 5.7
5	17 17 35.33	26 39 29.8	48.18	5	19 31 8.68	26 42 11.7
6	17 20 16.67	26 44 18.9	46.32	6	19 33 56.58	26 37 4.7
7	17 22 58.41	26 48 56.8	44.47	7	19 36 44.30	26 31 45.7
8	17 25 40.56	26 53 23.6	42.57	8	19 39 31.83	26 26 13.7
9	17 28 23.09	26 57 39.0	40.65	9	19 42 19.16	26 20 29.7
10	17 31 6.00	27 1 42.9	38.75	10	19 45 6.27	26 14 33.7
11	17 33 49.28	27 5 35.4	36.82	11	19 47 53.17	26 8 25.7
12	17 36 32.92	27 9 16.3	34.87	12	19 50 39.83	26 2 4.7
13	17 39 16.91	27 12 45.5	32.90	13	19 53 26.24	25 55 32.0
14	17 42 1.25	27 16 2.9	30.93	14	19 56 12.39	25 48 47.2
15	17 44 45.91	27 19 8.5	28.95	15	19 58 58.27	25 41 50.6
16	17 47 30.89	27 22 2.2	26.95	16	20 1 43.88	25 34 42.0
17	17 50 16.18	27 24 43.9	24.93	17	20 4 29.19	25 27 21.7
18	17 53 1.77	27 27 13.5	22.92	18	20 7 14.21	25 19 49.7
19	17 55 47.64	27 29 31.0	20.88	19	20 9 58.92	25 12 6.1
20	17 58 33.80	27 31 36.3	18.83	20	20 12 43.32	25 4 11.0
21	18 1 20.21	27 33 29.3	16.78	21	20 15 27.38	24 56 4.3
22	18 4 6.88	27 35 10.0	14.72	22	20 18 11.12	24 47 46.7
23	18 6 53.78	S. 27 36 38.3	12.63	23	20 20 54.52	S. 24 39 17.7
THURSDAY 2.				SATURDAY 4.		
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]
0	18 9 40.92	S. 27 37 54.1	10.55	0	20 23 37.56	S. 24 30 37.3
1	18 12 28.28	27 38 57.4	8.47	1	20 26 20.24	24 21 46.3
2	18 15 15.84	27 39 48.2	6.38	2	20 29 2.56	24 12 44.3
3	18 18 3.59	27 40 26.5	4.25	3	20 31 44.51	24 3 31.4
4	18 20 51.51	27 40 52.0	2.15	4	20 34 26.07	23 54 7.9
5	18 23 39.61	27 41 4.9	0.05	5	20 37 7.24	23 44 33.8
6	18 26 27.85	27 41 5.2	2.10	6	20 39 48.02	23 34 49.3
7	18 29 16.23	27 40 52.6	4.22	7	20 42 28.39	23 24 54.4
8	18 32 4.74	27 40 27.3	6.35	8	20 45 8.36	23 14 49.3
9	18 34 53.36	27 39 49.2	8.48	9	20 47 47.92	23 4 34.2
10	18 37 42.08	27 38 58.3	10.62	10	20 50 27.05	22 54 9.0
11	18 40 30.89	27 37 54.6	12.77	11	20 53 5.77	22 43 34.0
12	18 43 19.76	27 36 38.0	14.92	12	20 55 44.05	22 32 49.2
13	18 46 8.70	27 35 8.5	17.05	13	20 58 21.90	22 21 54.8
14	18 48 57.68	27 33 26.2	19.20	14	21 0 59.30	22 10 51.0
15	18 51 46.69	27 31 31.0	21.35	15	21 3 36.27	21 59 37.8
16	18 54 35.72	27 29 22.9	23.50	16	21 6 12.79	21 48 15.4
17	18 57 24.75	27 27 1.9	25.65	17	21 8 48.86	21 36 44.0
18	19 0 13.78	27 24 28.0	27.78	18	21 11 24.47	21 25 3.6
19	19 3 2.78	27 21 41.3	29.92	19	21 13 59.64	21 13 14.4
20	19 5 51.74	27 18 41.8	32.07	20	21 16 34.34	21 1 16.5
21	19 8 40.66	27 15 29.4	34.20	21	21 19	20 49 10.1
22	19 11 29.52	27 12 4.2	36.33	22	21 21	55.3
23	19 14 18.30	27 8 26.2	38.47	23	21 23	
24	19 17 6.99	S. 27 4 35.4		24	21 25	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 5.				TUESDAY 7.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	21 26 48.54	S. 20 12 1.0	126.52	0	23 20 14.16	S. 8 17 28.0	163.38
1	21 29 20.93	19 59 21.9	127.83	1	23 22 26.04	8 1 7.7	163.62
2	21 31 52.84	19 46 34.9	129.12	2	23 24 37.59	7 44 46.0	163.87
3	21 34 24.29	19 33 40.2	130.38	3	23 26 48.81	7 28 22.8	164.05
4	21 36 55.26	19 20 37.9	131.60	4	23 28 59.70	7 11 58.5	164.25
5	21 39 25.77	19 7 28.3	132.83	5	23 31 10.28	6 55 33.0	164.43
6	21 41 55.80	18 54 11.3	134.00	6	23 33 20.54	6 39 6.4	164.57
7	21 44 25.36	18 40 47.3	135.18	7	23 35 30.50	6 22 39.0	164.72
8	21 46 54.45	18 27 16.2	136.33	8	23 37 40.15	6 6 10.7	164.82
9	21 49 23.07	18 13 38.2	137.43	9	23 39 49.51	5 49 41.8	164.93
10	21 51 51.22	17 59 53.6	138.55	10	23 41 58.57	5 33 12.2	165.02
11	21 54 18.90	17 46 2.3	139.60	11	23 44 7.35	5 16 42.1	165.07
12	21 56 46.11	17 32 4.7	140.67	12	23 46 15.84	5 0 11.7	165.13
13	21 59 12.85	17 18 0.7	141.68	13	23 48 24.06	4 43 40.9	165.15
14	22 1 39.12	17 3 50.6	142.68	14	23 50 32.01	4 27 10.0	165.18
15	22 4 4.93	16 49 34.5	143.67	15	23 52 39.69	4 10 38.9	165.17
16	22 6 30.27	16 35 12.5	144.62	16	23 54 47.11	3 54 7.9	165.15
17	22 8 55.15	16 20 44.8	145.53	17	23 56 54.28	3 37 37.0	165.13
18	22 11 19.57	16 6 11.6	146.47	18	23 59 1.19	3 21 6.2	165.07
19	22 13 43.54	15 51 32.8	147.33	19	0 1 7.87	3 4 35.8	165.00
20	22 16 7.05	15 36 48.8	148.20	20	0 3 14.30	2 48 5.8	164.93
21	22 18 30.11	15 21 59.6	149.05	21	0 5 20.51	2 31 36.2	164.83
22	22 20 52.72	15 7 5.3	149.85	22	0 7 26.48	2 15 7.2	164.72
23	22 23 14.88	S. 14 52 6.2	150.65	23	0 9 32.23	S. 1 58 38.9	164.58
MONDAY 6.				WEDNESDAY 8.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	22 25 36.60	S. 14 37 2.3	151.42	0	0 11 37.77	S. 1 42 11.4	164.45
1	22 27 57.88	14 21 53.8	152.15	1	0 13 43.10	1 25 44.7	164.28
2	22 30 18.72	14 6 40.9	152.90	2	0 15 48.21	1 9 19.0	164.12
3	22 32 39.12	13 51 23.5	153.58	3	0 17 53.13	0 52 54.3	163.92
4	22 34 59.10	13 36 2.0	154.27	4	0 19 57.85	0 36 30.8	163.73
5	22 37 18.65	13 20 36.4	154.92	5	0 22 2.38	0 20 8.4	163.52
6	22 39 37.77	13 5 6.9	155.55	6	0 24 6.73	S. 0 3 47.3	163.28
7	22 41 56.47	12 49 33.6	156.17	7	0 26 10.90	N. 0 12 32.4	163.05
8	22 44 14.76	12 33 56.6	156.77	8	0 28 14.89	0 28 50.7	162.78
9	22 46 32.63	12 18 16.0	157.33	9	0 0 18.71	0 45 7.4	162.53
10	22 48 50.09	12 2 32.0	157.87	10	0 32 22.37	1 1 22.6	162.23
11	22 51 7.15	11 46 44.8	158.42	11	0 34 25.87	1 17 36.0	161.95
12	22 53 23.81	11 30 54.3	158.92	12	0 36 29.21	1 33 47.7	161.63
13	22 55 40.07	11 15 0.8	159.38	13	0 38 32.41	1 49 57.5	161.33
14	22 57 55.94	10 59 4.5	159.87	14	0 40 35.47	2 6 5.5	160.98
15	23 0 11.43	10 43 5.3	160.30	15	0 42 38.39	2 22 11.4	160.63
16	23 2 26.53	10 27 3.5	160.72	16	0 44 41.17	2 38 15.2	160.29
17	23 4 41.26	10 10 59.2	161.13	17	0 46 43.83	2 54 16.9	159.92
18	23 6 55.61	9 54 52.4	161.50	18	0 48 46.37	3 10 16.4	159.53
19	23 9 9.59	9 38 43.4	161.87	19	0 50 48.79	3 26 13.6	159.15
20	23 11 23.21	9 22 32.2	162.22	20	0 52 51.09	3 42 8.5	158.72
21	23 13 36.47	9 6 18.9	162.53	21	0 54 53.29	3 58 0.8	158.32
22	15 49.38	8 50 3.7	162.83	22	0 56 55.39	4 13 50.7	157.88
23	1 1.94	8 33 46.7	163.12	23	0 58 57.39	4 29 38.0	157.45
	14.16	S. 8 17 28.0		24	1 0 59.29	N. 4 45 22.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.
THURSDAY 9.				SATURDAY 11.		
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]
0	1 0 59.29	N. 4 45 22.7	156.98	0	2 38 9.90	N. 16 9 22.3
1	1 3 1.11	5 1 4.6	156.53	1	2 40 12.55	16 21 45.1
2	1 5 2.85	5 16 43.8	156.05	2	2 42 15.30	16 34 3.4
3	1 7 4.51	5 32 20.1	155.57	3	2 44 18.16	16 46 15.3
4	1 9 6.10	5 47 53.5	155.07	4	2 46 21.12	16 58 22.1
5	1 11 7.61	6 3 23.9	154.57	5	2 48 24.20	17 10 24.1
6	1 13 9.07	6 18 51.3	154.05	6	2 50 27.39	17 22 20.4
7	1 15 10.46	6 34 15.6	153.50	7	2 52 30.69	17 34 10.9
8	1 17 11.80	6 49 36.6	152.98	8	2 54 34.12	17 45 55.4
9	1 19 13.10	7 4 54.5	152.42	9	2 56 37.66	17 57 34.1
10	1 21 14.34	7 20 9.0	151.87	10	2 58 41.33	18 9 8.1
11	1 23 15.55	7 35 20.2	151.30	11	3 0 45.12	18 20 35.7
12	1 25 16.72	7 50 28.0	150.72	12	3 2 49.03	18 31 57.3
13	1 27 17.86	8 5 32.3	150.12	13	3 4 53.08	18 43 13.4
14	1 29 18.97	8 20 33.0	149.53	14	3 6 57.26	18 54 23.3
15	1 31 20.06	8 35 30.2	148.92	15	3 9 1.57	19 5 27.6
16	1 33 21.13	8 50 23.7	148.30	16	3 11 6.01	19 16 25.8
17	1 35 22.18	9 5 13.5	147.67	17	3 13 10.59	19 27 17.9
18	1 37 23.23	9 19 59.5	147.03	18	3 15 15.31	19 38 4.0
19	1 39 24.27	9 34 41.7	146.38	19	3 17 20.17	19 48 44.0
20	1 41 25.32	9 49 20.0	145.72	20	3 19 25.17	19 59 17.9
21	1 43 26.36	10 3 54.3	145.07	21	3 21 30.31	20 9 45.6
22	1 45 27.41	10 18 24.7	144.38	22	3 23 35.59	20 20 7.1
23	1 47 28.48	N. 10 32 51.0	143.70	23	3 25 41.02	N. 20 30 22.4
FRIDAY 10.				SUNDAY 12.		
0	1 49 29.55	N. 10 47 13.2	143.02	0	3 27 46.59	N. 20 40 31.3
1	1 51 30.65	11 1 31.3	142.30	1	3 29 52.31	20 50 34.6
2	1 53 31.77	11 15 45.1	141.60	2	3 31 58.18	21 0 30.3
3	1 55 32.92	11 29 54.7	140.89	3	3 34 4.19	21 10 20.1
4	1 57 34.11	11 44 0.0	140.15	4	3 36 10.35	21 20 3.6
5	1 59 35.33	11 58 0.9	139.42	5	3 38 16.67	21 29 40.6
6	2 1 36.58	12 11 57.4	138.67	6	3 40 23.13	21 39 11.0
7	2 3 37.88	12 25 49.4	137.92	7	3 42 29.75	21 48 34.9
8	2 5 39.23	12 39 36.9	137.15	8	3 44 36.51	21 57 52.2
9	2 7 40.63	12 53 19.8	136.40	9	3 46 43.43	22 7 2.9
10	2 9 42.08	13 6 58.2	135.60	10	3 48 50.50	22 16 6.9
11	2 11 43.59	13 20 31.8	134.82	11	3 50 57.73	22 25 4.2
12	2 13 45.16	13 34 0.7	134.02	12	3 53 5.10	22 33 54.8
13	2 15 46.79	13 47 24.8	133.23	13	3 55 12.63	22 42 38.6
14	2 17 48.49	14 0 44.2	132.40	14	3 57 20.31	22 51 15.5
15	2 19 50.26	14 13 58.6	131.60	15	3 59 28.15	22 59 45.7
16	2 21 52.11	14 27 8.2	130.77	16	4 1 36.14	23 8 8.9
17	2 23 54.03	14 40 12.8	129.93	17	4 3 44.28	23 16 25.2
18	2 25 56.03	14 53 12.4	129.08	18	4 5 52.57	23 24 34.6
19	2 27 58.12	15 6 6.9	128.23	19	4 8 1.01	23 32 37.0
20	2 30 0.29	15 18 56.3	127.38	20	4 10 9.60	23 40 32.4
21	2 32 2.55	15 31 40.6	126.53	21	4 12 18.34	23 48 20.8
22	2 34 4.91	15 44 19.8	125.68	22	4 14 27.24	23 56 2.1
23	2 36 7.36	15 56 53.6	124.77	23	4 16 36.28	24 3 36.3
24	2 38 9.90	N. 16 9 22.2		24	4 18 45.46	N. 24 11 3.3

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 13.				WEDNESDAY 15.			
0	4 18 45.46	N.24 11 3.3	73.32	0	6 4 22.99	N.27 40 21.4	11.42
1	4 20 54.79	24 18 23.2	72.12	1	6 6 36.70	27 41 29.9	10.08
2	4 23 4.27	24 25 35.9	70.92	2	6 8 50.42	27 42 30.4	8.73
3	4 25 13.89	24 32 41.4	69.70	3	6 11 4.15	27 43 22.8	7.39
4	4 27 23.66	24 39 39.6	68.48	4	6 13 17.87	27 44 7.1	6.05
5	4 29 33.57	24 46 30.5	67.27	5	6 15 31.59	27 44 43.4	4.72
6	4 31 43.62	24 53 14.1	66.05	6	6 17 45.30	27 45 11.7	3.35
7	4 33 53.81	24 59 50.4	64.80	7	6 19 59.00	27 45 31.8	2.02
8	4 36 4.14	25 6 19.2	63.58	8	6 22 12.68	27 45 43.9	0.68
9	4 38 14.61	25 12 40.7	62.33	9	6 24 26.34	27 45 48.0	0.67
10	4 40 25.21	25 18 54.7	61.10	10	6 26 39.98	27 45 44.0	2.00
11	4 42 35.94	25 25 1.3	59.85	11	6 28 53.59	27 45 32.0	3.35
12	4 44 46.81	25 31 0.4	58.60	12	6 31 7.16	27 45 11.9	4.68
13	4 46 57.81	25 36 52.0	57.33	13	6 33 20.70	27 44 43.8	6.02
14	4 49 8.93	25 42 36.0	56.07	14	6 35 34.19	27 44 7.7	7.37
15	4 51 20.18	25 48 12.4	54.82	15	6 37 47.64	27 43 23.5	8.70
16	4 53 31.56	25 53 41.3	53.53	16	6 40 1.04	27 42 31.3	10.02
17	4 55 43.05	25 59 2.5	52.28	17	6 42 14.39	27 41 31.2	11.37
18	4 57 54.66	26 4 16.2	50.98	18	6 44 27.67	27 40 23.0	12.68
19	5 0 6.39	26 9 22.1	49.72	19	6 46 40.90	27 39 6.9	14.02
20	5 2 18.23	26 14 20.4	48.42	20	6 48 54.06	27 37 42.8	15.33
21	5 4 30.18	26 19 10.9	47.15	21	6 51 7.14	27 36 10.8	16.67
22	5 6 42.23	26 23 53.8	45.85	22	6 53 20.16	27 34 30.8	17.98
23	5 8 54.39	N.26 28 28.9	44.55	23	6 55 33.09	N.27 32 42.9	19.30
TUESDAY 14.				THURSDAY 16.			
0	5 11 6.65	N.26 32 56.2	43.27	0	6 57 45.94	N.27 30 47.1	20.62
1	5 13 19.01	26 37 15.8	41.95	1	6 59 58.70	27 28 43.4	21.93
2	5 15 31.46	26 41 27.5	40.65	2	7 2 11.37	27 26 31.8	23.23
3	5 17 44.01	26 45 31.4	39.35	3	7 4 23.95	27 24 12.4	24.55
4	5 19 56.65	26 49 27.5	38.05	4	7 6 36.43	27 21 45.1	25.85
5	5 22 9.37	26 53 15.8	36.72	5	7 8 48.80	27 19 10.0	27.15
6	5 24 22.18	26 56 56.1	35.42	6	7 11 1.07	27 16 27.1	28.45
7	5 26 35.07	27 0 28.6	34.10	7	7 13 13.22	27 13 36.4	29.75
8	5 28 48.03	27 3 53.2	32.77	8	7 15 25.26	27 10 37.9	31.03
9	5 31 1.07	27 7 9.8	31.45	9	7 17 37.19	27 7 31.7	32.32
10	5 33 14.18	27 10 18.5	30.13	10	7 19 48.99	27 4 17.8	33.60
11	5 35 27.35	27 13 19.3	28.80	11	7 22 0.67	27 0 56.2	34.89
12	5 37 40.59	27 16 12.1	27.47	12	7 24 12.22	26 57 26.9	36.17
13	5 39 53.89	27 18 56.9	26.15	13	7 26 23.64	26 53 49.9	37.42
14	5 42 7.24	27 21 33.8	24.82	14	7 28 34.92	26 50 5.4	38.70
15	5 44 20.64	27 24 2.7	23.47	15	7 30 46.06	26 46 13.2	39.97
16	5 46 34.10	27 26 23.5	22.15	16	7 32 57.06	26 42 13.4	41.22
17	5 48 47.59	27 28 36.4	20.80	17	7 35 7.91	26 38 6.1	42.47
18	5 51 1.13	27 30 41.2	19.47	18	7 37 18.62	26 33 51.3	43.72
19	5 53 14.70	27 32 38.0	18.13	19	7 39 29.17	26 29 29.0	44.95
20	5 55 28.31	27 34 26.8	16.78	20	7 41 39.57	26 24 59.3	46.20
21	5 57 41.95	27 36 7.5	15.45	21	7 43 49.81	26 20 22.1	47.43
22	5 59 55.61	27 37 40.2	14.10	22	7 45 59.89	26 15 37.5	48.67
23	6 2 9.29	27 39 4.8	12.77	23	7 48 9.81	26 10 45.5	49.89
24	6 4 22.99	N.27 40 21.4		24	7 50 19.56	N.26 5 46.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 17.				SUNDAY 19.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	7 50 19.56	N.26 5 46.2	51.10	0	9 30 15.75	N.19 54 46.9	101
1	7 52 29.14	26 0 39.6	52.32	1	9 32 15.49	19 44 36.2	102
2	7 54 38.55	25 55 25.7	53.52	2	9 34 15.03	19 34 20.2	103
3	7 56 47.79	25 50 4.6	54.72	3	9 36 14.36	19 23 59.1	104
4	7 58 56.85	25 44 36.3	55.92	4	9 38 13.47	19 13 32.9	105
5	8 1 5.72	25 39 0.8	57.10	5	9 40 12.39	19 3 1.6	106
6	8 3 14.42	25 33 18.2	58.28	6	9 42 11.10	18 52 25.2	107
7	8 5 22.94	25 27 28.5	59.47	7	9 44 9.60	18 41 43.9	108
8	8 7 31.26	25 21 31.7	60.65	8	9 46 7.91	18 30 57.7	109
9	8 9 39.40	25 15 27.8	61.80	9	9 48 6.01	18 20 6.5	110
10	8 11 47.35	25 9 17.0	62.97	10	9 50 3.91	18 9 10.6	111
11	8 13 55.10	25 2 59.2	64.12	11	9 52 1.62	17 58 9.8	112
12	8 16 2.66	24 56 34.5	65.27	12	9 53 59.12	17 47 4.3	113
13	8 18 10.02	24 50 2.9	66.42	13	9 55 56.44	17 35 54.1	114
14	8 20 17.19	24 43 24.4	67.55	14	9 57 53.56	17 24 39.3	115
15	8 22 24.16	24 36 39.1	68.68	15	9 59 50.50	17 13 19.8	116
16	8 24 30.93	24 29 47.0	69.78	16	10 1 47.25	17 1 55.9	117
17	8 26 37.49	24 22 48.3	70.92	17	10 3 43.80	16 50 27.4	118
18	8 28 43.85	24 15 42.8	72.02	18	10 5 40.18	16 38 54.6	119
19	8 30 50.00	24 8 30.7	73.12	19	10 7 36.37	16 27 17.3	120
20	8 32 55.95	24 1 12.0	74.22	20	10 9 32.38	16 15 35.7	121
21	8 35 1.69	23 53 46.7	75.30	21	10 11 28.21	16 3 49.8	122
22	8 37 7.22	23 46 14.9	76.37	22	10 13 23.86	15 51 59.7	123
23	8 39 12.54	N.23 38 36.7	77.43	23	10 15 19.33	N.15 40 5.4	124
SATURDAY 18.				MONDAY 20.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	8 41 17.64	N.23 30 52.1	78.50	0	10 17 14.64	N.15 28 7.0	125
1	8 43 22.54	23 23 1.1	79.57	1	10 19 9.77	15 16 4.5	126
2	8 45 27.22	23 15 3.7	80.60	2	10 21 4.74	15 3 58.0	127
3	8 47 31.69	23 7 0.1	81.65	3	10 22 59.54	14 51 47.5	128
4	8 49 35.95	22 58 50.2	82.70	4	10 24 54.18	14 39 33.1	129
5	8 51 39.99	22 50 34.0	83.72	5	10 26 48.66	14 27 14.8	130
6	8 53 43.81	22 42 11.7	84.73	6	10 28 42.98	14 14 52.7	131
7	8 55 47.42	22 33 43.3	85.75	7	10 30 37.14	14 2 26.8	132
8	8 57 50.81	22 25 8.8	86.75	8	10 32 31.15	13 49 57.2	133
9	8 59 53.99	22 16 28.3	87.75	9	10 34 25.01	13 37 23.9	134
10	9 1 56.95	22 7 41.8	88.75	10	10 36 18.73	13 24 46.9	135
11	9 3 59.69	21 58 49.3	89.73	11	10 38 12.30	13 12 6.4	136
12	9 6 2.22	21 49 50.9	90.72	12	10 40 5.73	12 59 22.4	137
13	9 8 4.53	21 40 46.6	91.68	13	10 41 59.02	12 46 34.9	138
14	9 10 6.63	21 31 36.5	92.63	14	10 43 52.17	12 33 44.0	139
15	9 12 8.51	21 22 20.7	93.60	15	10 45 45.19	12 20 49.7	140
16	9 14 10.17	21 12 59.1	94.53	16	10 47 38.08	12 7 52.1	141
17	9 16 11.62	21 3 31.9	95.47	17	10 49 30.85	11 54 51.2	142
18	9 18 12.85	20 53 59.1	96.40	18	10 51 23.48	11 41 47.1	143
19	9 20 13.86	20 44 20.7	97.32	19	10 53 16.00	11 28 39.8	144
20	9 22 14.67	20 34 36.8	98.23	20	10 55 8.40	11 15 29.5	145
21	9 24 15.26	20 24 47.4	99.13	21	10 57 0.69	11 2 16.0	146
22	9 26 15.63	20 14 52.6		22	10 58 52.86	10 48 59.6	147
23	9 28 15.80	20 4 52.4		23	0 44.92	10 35 40.2	148
24	9 30 15.75	N.19 54 46.9		24	36.88	N.10 22 17.9	149

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 21.				THURSDAY 23.		
h m s	° ' "	"		h m s	° ' "	"
1 2 36.88	N. 10 22 17.9	134.18	0	12 31 17.36	S. 0 59 44.5	146.90
1 4 28.73	10 8 52.8	134.67	1	12 33 8.68	1 14 25.9	146.95
1 6 20.49	9 55 24.8	135.12	2	12 35 0.10	1 29 7.6	146.98
1 8 12.15	9 41 54.1	135.57	3	12 36 51.62	1 43 49.5	147.02
1 10 3.72	9 28 20.7	136.02	4	12 38 43.23	1 58 31.6	147.03
1 11 55.20	9 14 44.6	136.43	5	12 40 34.95	2 13 13.8	147.03
1 13 46.60	9 1 6.0	136.88	6	12 42 26.77	2 27 56.0	147.05
1 15 37.91	8 47 24.7	137.28	7	12 44 18.71	2 42 38.3	147.03
1 17 29.15	8 33 41.0	137.68	8	12 46 10.76	2 57 20.5	147.00
1 19 20.31	8 19 54.9	138.10	9	12 48 2.93	3 12 2.5	146.98
1 21 11.40	8 6 6.3	138.48	10	12 49 55.23	3 26 44.4	146.95
1 23 2.42	7 52 15.4	138.87	11	12 51 47.66	3 41 26.1	146.90
1 24 53.37	7 38 22.2	139.23	12	12 53 40.23	3 56 7.5	146.83
1 26 44.27	7 24 26.8	139.62	13	12 55 32.94	4 10 48.5	146.78
1 28 35.10	7 10 29.1	139.97	14	12 57 25.79	4 25 29.2	146.68
1 30 25.89	6 56 29.3	140.32	15	12 59 18.79	4 40 9.3	146.62
1 32 16.63	6 42 27.4	140.65	16	13 1 11.95	4 54 49.0	146.50
1 34 7.32	6 28 23.5	140.98	17	13 3 5.26	5 9 28.0	146.40
1 35 57.96	6 14 17.6	141.30	18	13 4 58.74	5 24 6.4	146.28
1 37 48.57	6 0 9.8	141.63	19	13 6 52.38	5 38 44.1	146.15
1 39 39.15	5 46 0.0	141.92	20	13 8 46.20	5 53 21.0	146.02
1 41 29.69	5 31 48.5	142.23	21	13 10 40.19	6 7 57.1	145.87
1 43 20.21	5 17 35.1	142.50	22	13 12 34.37	6 22 32.3	145.72
1 45 10.70	N. 5 3 20.1	142.80	23	13 14 28.73	S. 6 37 6.6	145.53
WEDNESDAY 22.				FRIDAY 24.		
h m s	° ' "	"		h m s	° ' "	"
1 47 1.17	N. 4 49 3.3	143.07	0	13 16 23.28	S. 6 51 39.8	145.35
1 48 51.63	4 34 44.9	143.32	1	13 18 18.03	7 6 11.9	145.17
1 50 42.08	4 20 25.0	143.58	2	13 20 12.97	7 20 42.9	144.97
1 52 32.52	4 6 3.5	143.83	3	13 22 8.13	7 35 12.7	144.75
1 54 22.95	3 51 40.5	144.05	4	13 24 3.49	7 49 41.2	144.53
1 56 13.39	3 37 16.2	144.28	5	13 25 59.06	8 4 8.4	144.30
1 58 3.83	3 22 50.5	144.52	6	13 27 54.86	8 18 34.2	144.05
1 59 54.28	3 8 23.4	144.70	7	13 29 50.88	8 32 58.5	143.80
2 1 44.75	2 53 55.2	144.92	8	13 31 47.12	8 47 21.3	143.53
2 3 35.23	2 39 25.7	145.12	9	13 33 43.60	9 1 42.5	143.27
2 5 25.73	2 24 55.0	145.28	10	13 35 40.32	9 16 2.1	142.97
2 7 16.26	2 10 23.3	145.47	11	13 37 37.28	9 30 19.9	142.67
2 9 6.82	1 55 50.5	145.63	12	13 39 34.49	9 44 35.9	142.37
2 10 57.41	1 41 16.7	145.78	13	13 41 31.96	9 58 50.1	142.03
2 12 48.05	1 26 42.0	145.93	14	13 43 29.68	10 13 2.3	141.70
2 14 38.72	1 12 6.4	146.07	15	13 45 27.66	10 27 12.5	141.37
2 16 29.44	0 57 30.0	146.18	16	13 47 25.91	10 41 20.7	141.00
2 18 20.21	0 42 52.9	146.32	17	13 49 24.44	10 55 26.7	140.63
2 20 11.03	0 28 15.0	146.43	18	13 51 23.24	11 9 30.5	140.27
2 22 1.91	N. 0 13 36.4	146.53	19	13 53 22.32	11 23 32.1	139.87
2 23 52.86	S. 0 1 2.8	146.62	20	13 55 21.68	11 37 31.3	139.45
2 25 43.87	0 15 42.5	146.72	21	13 57 21.34	11 51 28.0	139.05
2 27 34.96	0 30 22.8	146.78	22	13 59 21.29	12 5 22.3	138.62
2 29 26.12	0 45 3.5	146.83	23	14 1 21.54	12 19 14.0	138.17
2 31 17.36	S. 0 59 44.5		24	14 3 22.10	S. 12 33 3.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.
SATURDAY 25.				MONDAY 27.		
0	h m s	° ' "	"	0	h m s	° ' "
0	14 3 22.10	S. 12 33 3.0	137.72	0	15 47 7.23	S. 22 18 0.1
1	14 5 22.96	12 46 49.3	137.27	1	15 49 27.41	22 27 57.4
2	14 7 24.14	13 0 32.9	136.77	2	15 51 48.06	22 37 47.7
3	14 9 25.63	13 14 13.5	136.28	3	15 54 9.17	22 47 30.8
4	14 11 27.45	13 27 51.2	135.78	4	15 56 30.74	22 57 6.7
5	14 13 29.59	13 41 25.9	135.27	5	15 58 52.78	23 6 35.2
6	14 15 32.06	13 54 57.5	134.73	6	16 1 15.29	23 15 56.3
7	14 17 34.87	14 8 25.9	134.20	7	16 3 38.25	23 25 9.9
8	14 19 38.02	14 21 51.1	133.63	8	16 6 1.68	23 34 15.8
9	14 21 41.51	14 35 12.9	133.07	9	16 8 25.58	23 43 14.0
10	14 23 45.35	14 48 31.3	132.48	10	16 10 49.94	23 52 4.3
11	14 25 49.54	15 1 46.2	131.90	11	16 13 14.76	24 0 46.7
12	14 27 54.09	15 14 57.6	131.28	12	16 15 40.04	24 9 21.0
13	14 29 59.00	15 28 5.3	130.65	13	16 18 5.79	24 17 47.2
14	14 32 4.28	15 41 9.2	130.03	14	16 20 31.99	24 26 5.2
15	14 34 9.93	15 54 9.4	129.37	15	16 22 58.65	24 34 14.8
16	14 36 15.96	16 7 5.6	128.72	16	16 25 25.77	24 42 16.0
17	14 38 22.36	16 19 57.9	128.03	17	16 27 53.34	24 50 8.6
18	14 40 29.15	16 32 46.1	127.33	18	16 30 21.36	24 57 52.6
19	14 42 36.32	16 45 30.1	126.63	19	16 32 49.82	25 5 27.9
20	14 44 43.88	16 58 9.9	125.92	20	16 35 18.74	25 12 54.3
21	14 46 51.84	17 10 45.4	125.17	21	16 37 48.09	25 20 11.8
22	14 49 0.19	17 23 16.4	124.43	22	16 40 17.88	25 27 20.3
23	14 51 8.95	S. 17 35 43.0	123.67	23	16 42 48.11	S. 25 34 19.6
SUNDAY 26.				TUESDAY 28.		
0	h m s	° ' "	"	0	h m s	° ' "
0	14 53 18.10	S. 17 48 5.0	122.89	0	16 45 18.77	S. 25 41 9.7
1	14 55 27.67	18 0 22.3	122.10	1	16 47 49.86	25 47 50.5
2	14 57 37.64	18 12 34.9	121.28	2	16 50 21.37	25 54 21.9
3	14 59 48.04	18 24 42.6	120.47	3	16 52 53.30	26 0 43.8
4	15 1 58.85	18 36 45.4	119.63	4	16 55 25.65	26 6 56.1
5	15 4 10.09	18 48 43.2	118.77	5	16 57 58.41	26 12 58.6
6	15 6 21.75	19 0 35.8	117.90	6	17 0 31.57	26 18 51.4
7	15 8 33.83	19 12 23.2	117.02	7	17 3 5.14	26 24 34.4
8	15 10 46.35	19 24 5.3	116.12	8	17 5 39.10	26 30 7.4
9	15 12 59.30	19 35 42.0	115.20	9	17 8 13.45	26 35 30.3
10	15 15 12.69	19 47 13.2	114.28	10	17 10 48.18	26 40 43.1
11	15 17 26.52	19 58 38.9	113.32	11	17 13 23.29	26 45 45.6
12	15 19 40.78	20 9 58.8	112.37	12	17 15 58.77	26 50 37.9
13	15 21 55.49	20 21 13.0	111.38	13	17 18 34.62	26 55 19.8
14	15 24 10.66	20 32 21.3	110.38	14	17 21 10.83	26 59 51.2
15	15 26 26.27	20 43 23.6	109.38	15	17 23 47.39	27 4 12.0
16	15 28 42.33	20 54 19.9	108.35	16	17 26 24.30	27 8 22.2
17	15 30 58.84	21 5 10.0	107.32	17	17 29 1.55	27 12 21.7
18	15 33 15.81	21 15 53.9	106.23	18	17 31 39.12	27 16 10.5
19	15 35 33.24	21 26 31.3	105.18	19	17 34 17.01	27 19 48.4
20	15 37 51.12	21 37 2.4	104.08	20	17 36 55.22	27 23 1.1
21	15 40 9.46	21 47 26.9	102.97	21	17 39 33.74	27 26 2.1
22	15 42 28.25	21 57 44.7	101.85	22	17 42 12.55	27 29 2.1
23	15 44 47.51	22 7 55.8	100.72	23	17 44 51.66	
24	15 47 7.23	S. 22 18 0.1		24	17 47 31.04	

MEAN TIME.

PHASES OF THE MOON.

	d	h	m
● New Moon - - - - -	4	22	7.8
☾ First Quarter - - - - -	11	21	39.3
○ Full Moon - - - - -	20	2	23.3
☾ Last Quarter - - - - -	27	17	30.8

	d	h
☾ Perigee - - - - -	4	4
☾ Apogee - - - - -	16	19

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.		Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .
			° ' "		° ' "		° ' "		° ' "
1	Spica η g W.		55 52 40	2206	57 40 59	2190	59 29 41	2176	61 18 4
	Saturn W.		31 19 12	2233	33 6 51	2215	34 54 56	2199	36 43 8
	Antares W.		10 3 46	2263	11 50 40	2231	13 38 22	2204	15 26 4
	Venus E.		28 45 2	2661	27 7 29	2653	25 29 46	2647	23 51 3
	SUN E.		55 4 15	2537	53 23 53	2522	51 43 11	2508	50 2
2	Spica η g W.		70 29 28	2094	72 20 36	2082	74 12 3	2071	76 3 4
	Saturn W.		45 51 41	2111	47 42 23	2098	49 33 25	2086	51 24 4
	Antares W.		24 35 49	2099	26 26 50	2086	28 18 11	2074	30 9 1
	SUN E.		41 32 18	2433	39 49 30	2423	38 6 28	2414	36 23 1
3	Spica η g W.		85 26 17	2016	87 19 27	2009	89 12 47	2003	91 6 1
	Antares W.		39 32 19	2014	41 25 31	2007	43 18 54	2001	45 12 2
6	α Arietis E.		63 58 30	2139	62 8 30	2153	60 18 52	2168	58 29 3
	Aldebaran E.		94 15 23	2102	92 24 26	2113	90 33 46	2124	88 43 2
7	SUN W.		29 14 26	2541	30 54 42	2553	32 34 42	2565	34 14 2
	α Arietis E.		49 29 51	2280	47 43 22	2303	45 57 27	2327	44 12
	Aldebaran E.		79 36 42	2210	77 48 30	2227	76 0 42	2244	74 13 2
8	SUN W.		42 27 57	2658	44 5 33	2676	45 42 45	2695	47 19 3
	α Arietis E.		35 35 21	2507	33 54 17	2545	32 14 6	2585	30 34 5
	Aldebaran E.		65 23 6	2356	63 38 28	2376	61 54 19	2396	60 10 3
	Jupiter E.		- - -	- - -	- - -	- - -	126 44 26	2314	124 58 4
9	SUN W.		55 17 4	2811	56 51 17	2831	58 25 5	2851	59 58 2
	Aldebaran E.		51 39 53	2527	49 59 17	2550	48 19 13	2574	46 39 4
	Pollux E.		95 14 53	2454	93 32 35	2473	91 50 44	2493	90 9 2
	Jupiter E.		116 17 8	2424	114 34 8	2443	112 51 34	2462	111 9 2
	Mars E.		119 59 37	2328	118 14 18	2347	116 29 27	2366	114 45 4
10	SUN W.		67 38 54	2970	69 9 44	2989	70 40 10	3009	72 10 12
	Aldebaran E.		38 30 29	2725	36 54 23	2753	35 18 54	2783	33 44 4
	Pollux E.		81 49 0	2607	80 10 14	2624	78 31 52	2643	76 53 5
	Jupiter E.		102 45 23	2573	101 5 51	2591	99 26 44	2609	97 48 1
	Mars E.		106 9 48	2478	104 28 4	2495	102 46 43	2512	101 5 4
11	SUN W.		79 34 33	3120	81 2 18	3137	82 29 43	3154	83 56 4
	Aldebaran E.		26 0 40	3003	24 30 31	3052	23 1 23	3109	21 33 2
	Pollux E.		68 50 4	2747	67 14 27	2763	65 39 10	2779	64 4 1
	Jupiter E.		89 40 20	2711	88 3 55	2728	86 27 52	2744	84 52 1
	Mars E.		92 47 11	2615	91 8 36	2631	89 30 23	2646	87 52 3
12	SUN W.		91 7 15	3249	92 32 26	3264	93 57 20	3277	95 21 5
	α Arietis W.		20 56 16	3393	22 18 41	3339	23 42 7	3299	25 6 2
	Pollux E.		56 14 32	2867	54 41 31	2881	53 8 48	2894	51 36 2
	Jupiter E.		76 58 37	2832	75 24 50	2845	73 51 20	2858	72 18
	Mars E.		79 48 10	2733	78 12 14	2746	76 36 35	2759	75 1 1
13	SUN W.		102 21 18	335	103 36 4	3364	105 7 26	3374	106 30 1
	α Arietis W.		32 14 28	31	33 30 31	3172	35 7 30	3172	36 34 1
	Pollux E.		43 57 57	28	42 41	2948	56 13	2984	39 25 4
	Jupiter E.		64 35 53		62 41	2948	60 1	2948	60 1 2
	Mars E.		67 8 16		65 13	2846	62 27	2846	62 27 1

MEAN TIME.

LUNAR DISTANCES.

Name and Position.		Midnight.		P. L. of diff.	XV ^h .		P. L. of diff.	XVIII ^h .		P. L. of diff.	XXI ^h .		P. L. of diff.				
		°	'	"	°	'	"	°	'	"	°	'	"				
mg	W.	63	8	12	2146	64	58	1	2133	66	48	10	2120	68	38	39	2107
	W.	38	32	19	2167	40	21	36	2152	42	11	16	2137	44	1	18	2124
es	W.	17	15	39	2163	19	5	3	2145	20	54	54	2128	22	45	10	2113
	E.	22	14	0	2645	20	36	6	2652	18	58	21	2664	17	20	53	2684
	E.	48	20	47	2480	46	39	6	2467	44	57	7	2455	43	14	50	2444
mg	W.	77	55	48	2050	79	48	4	2041	81	40	35	2032	83	33	20	2024
	W.	53	16	23	2064	55	8	17	2054	57	0	27	2045	58	52	51	2037
es	W.	32	1	49	2051	33	54	4	2041	35	46	35	2032	37	39	20	2023
	E.	34	39	49	2401	32	56	16	2396	31	12	35	2392	29	28	49	2390
mg	W.	92	59	55	1993	94	53	40	1989	96	47	31	1986	98	41	27	1983
es	W.	47	6	9	1991	48	59	58	1986	50	53	54	1982	52	47	56	1978
tis	E.	56	40	44	2201	54	52	18	2220	53	4	20	2239	51	16	51	2259
aran	E.	86	53	20	2151	85	3	38	2165	83	14	17	2179	81	25	18	2194
	W.	35	53	49	2593	37	32	53	2608	39	11	37	2624	40	49	59	2642
tis	E.	42	27	24	2380	40	43	20	2408	38	59	56	2438	37	17	15	2470
aran	E.	72	26	23	2279	70	39	52	2298	68	53	49	2316	67	8	13	2336
	W.	48	55	52	2733	50	31	48	2752	52	7	19	2772	53	42	24	2791
tis	E.	28	56	38	2683	27	19	35	2741	25	43	49	2805	24	9	27	2875
aran	E.	58	27	29	2438	56	44	49	2460	55	2	39	2482	53	21	0	2505
r	E.	123	13	34	2351	121	28	48	2369	119	44	28	2387	118	0	35	2405
	W.	61	31	24	2891	63	3	54	2911	64	35	59	2931	66	7	39	2950
aran	E.	45	0	44	2622	43	22	19	2647	41	44	28	2672	40	7	11	2698
	E.	88	28	24	2531	86	47	54	2550	85	7	50	2569	83	28	12	2588
r	E.	109	27	46	2499	107	46	32	2517	106	5	43	2536	104	25	20	2555
	E.	113	1	8	2403	111	17	38	2422	109	34	35	2441	107	51	59	2459
	W.	73	39	50	3047	75	9	5	3066	76	37	56	3083	78	6	26	3102
aran	E.	32	9	54	2846	30	36	26	2880	29	3	42	2917	27	31	45	2958
	E.	75	16	22	2678	73	39	13	2696	72	2	27	2713	70	26	5	2729
r	E.	96	9	42	2644	94	31	47	2661	92	54	15	2678	91	17	6	2695
	E.	99	25	16	2548	97	45	10	2565	96	5	27	2582	94	26	8	2599
	W.	85	23	31	3187	86	49	56	3203	88	16	1	3219	89	41	47	3235
aran	E.	20	6	45	3253	18	41	38	3345	-	-	-	-	-	-	-	-
	E.	62	29	39	2810	60	55	24	2825	59	21	28	2839	57	47	51	2853
r	E.	83	16	49	2775	81	41	48	2789	80	7	6	2803	78	32	42	2818
	E.	86	14	59	2677	84	37	48	2692	83	0	57	2705	81	24	24	2719
	W.	96	46	19	3304	98	10	26	3318	99	34	17	3330	100	57	54	3341
is	W.	26	31	9	3242	27	56	28	3222	29	22	11	3207	30	48	12	3194
	E.	50	4	11	2918	48	32	15	2931	47	0	35	2942	45	29	9	2953
	E.	70	45	11	2883	69	12	30	2895	67	40	4	2905	66	7	52	2917
	E.	73	26	7	2783	71	51	17	2795	70	16	42	2806	68	42	22	2817
	W.	107	52	47	3394	109	15	11	3403	110	37	24	3411	111	59	28	3420
is	W.	38	1	1	3165	39	27	52	3162	40	54	46	3160	42	21	43	3160
	E.	37	55	18	3001	36	25	7	3010	34	55	7	3018	33	25	17	3026
	E.	58	30	16	2966	56	59	21	2975	55	28	37	2983	53	58	3	2991
	E.	60	53	59	2863	59	20	53	2872	57	47	58	2880	56	15	13	2887

MEAN TIME.											
LUNAR DISTANCES.											
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.	Day of the Month.	
13	Regulus E.	80 32 22	2971	79 1 33	2981	77 30 57	2991	76 0 33	2991	13	
14	SUN W.	113 21 22	3427	114 43 8	3435	116 4 45	3442	117 26 14	3442	14	
	α Arietis W.	43 48 40	3159	45 15 38	3159	46 42 36	3159	48 9 34	3159		
	Aldebaran W.	14 39 5	3790	15 54 18	3663	17 11 45	3572	18 30 30	3572		
	Pollux E.	31 55 37	3034	30 26 6	3041	28 56 44	3048	27 27 30	3048		
	Jupiter E.	52 27 39	2999	50 57 25	3006	49 27 19	3013	47 57 22	3013		
	Mars E.	54 42 38	2894	53 10 12	2901	51 37 54	2907	50 5 44	2907		
	Regulus E.	68 31 12	3040	67 1 49	3046	65 32 33	3053	64 3 26	3053		
15	α Arietis W.	55 24 22	3160	56 51 19	3160	58 18 16	3160	59 45 13	3160	15	
	Aldebaran W.	25 21 29	3309	26 45 30	3289	28 9 54	3272	29 34 38	3272		
	Jupiter E.	40 29 33	3048	39 0 19	3053	37 31 12	3058	36 2 11	3058		
	Mars E.	42 26 34	2936	40 55 1	2939	39 23 32	2942	37 52 6	2942		
	Regulus E.	56 39 30	3083	55 11 0	3087	53 42 34	3091	52 14 13	3091		
16	α Arietis W.	67 0 4	3157	68 27 5	3155	69 54 8	3154	71 21 12	3154	16	
	Aldebaran W.	36 42 4	3205	38 8 7	3198	39 34 19	3191	41 0 39	3191		
	Jupiter E.	28 38 32	3087	27 10 7	3093	25 41 49	3099	24 13 38	3099		
	Mars E.	30 15 42	2954	28 44 31	2954	27 13 21	2954	25 42 11	2954		
	Regulus E.	44 53 17	3105	43 25 14	3107	41 57 13	3109	40 29 14	3109		
	Spica π E.	98 52 51	3088	97 24 27	3088	95 56 3	3088	94 27 39	3088		
	Saturn E.	123 51 57	3098	122 23 45	3098	120 55 33	3097	119 27 20	3097		
17	α Arietis W.	78 37 6	3142	80 4 25	3139	81 31 47	3136	82 59 13	3136	17	
	Aldebaran W.	48 14 10	3155	49 41 13	3150	51 8 22	3144	52 35 38	3144		
	Regulus E.	33 9 39	3115	31 41 48	3117	30 13 59	3119	28 46 12	3119		
	Spica π E.	87 5 27	3082	85 36 56	3080	84 8 22	3078	82 39 43	3078		
	Saturn E.	112 5 59	3089	110 37 36	3087	109 9 11	3084	107 40 42	3084		
18	Aldebaran W.	59 53 34	3112	61 21 29	3107	62 49 30	3101	64 17 38	3101	18	
	Pollux W.	15 35 41	3079	17 4 16	3071	18 33 1	3064	20 1 53	3064		
	Spica π E.	75 15 49	3060	73 46 50	3056	72 17 47	3051	70 48 38	3051		
	Saturn E.	100 17 24	3065	98 48 31	3061	97 19 34	3056	95 50 31	3056		
19	Aldebaran W.	71 40 4	3067	73 8 54	3061	74 37 52	3055	76 6 57	3055	19	
	Pollux W.	27 28 26	3026	28 58 7	3020	30 27 55	3014	31 57 51	3014		
	Jupiter W.	- - -	-	- - -	-	11 20 2	3231	12 45 34	3231		
	Spica π E.	63 21 33	3025	61 51 51	3020	60 22 3	3015	58 52 9	3015		
	Saturn E.	88 23 53	3028	86 54 15	3023	85 24 31	3018	83 54 40	3018		
20	Aldebaran W.	83 34 16	3017	85 4 7	3011	86 34 6	3005	88 4 13	3005	20	
	Pollux W.	39 29 24	2977	41 0 6	2970	42 30 56	2964	44 1 54	2964		
	Jupiter W.	20 6 46	3018	21 36 36	3001	23 6 47	2985	24 37 18	2985		
	Mars W.	18 43 15	2860	20 16 25	2854	21 49 43	2849	23 23 7	2849		
	Spica π E.	51 20 58	2981	49 50 22	2976	48 19 39	2970	46 48 49	2970		
	Saturn E.	76 23 41	2983	74 53 7	2977	73 22 26	2971	71 51 37	2971		
	Antares E.	97 12 12	2974	95 41 27	2967	94 10 33	2961	92 39 38	2961		
21	Pollux W.	51 38 53	2928	53 10 43	2916	- - -	-	- - -	-		
	Jupiter W.	32 13 44	2917	33 45 41	2907	- - -	-	- - -	-		
	Mars W.	31 12 9	2812	32 46 21	-	- - -	-	- - -	-		
	Regulus W.	15 35 20	3069	17 4 7	-	- - -	-	- - -	-		
	Spica π E.	39 12 54	2936	37 41 21	-	- - -	-	- - -	-		

MEAN TIME.

LUNAR DISTANCES.

Star's Name and Position.		Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
gulus E.		74 30 20	3009	73 0 18	3017	71 30 26	3025	70 0 44	3033
rietis W.		118 47 36	3454	120 8 51	3460	121 30 0	3465	122 51 3	3471
ebaran W.		49 36 32	3159	51 3 30	3159	52 30 28	3160	53 57 25	3160
lux W.		19 51 14	3444	21 12 41	3400	22 34 58	3364	23 57 56	3333
ux E.		25 58 25	3061	24 29 28	3067	23 0 38	3073	21 31 55	3079
iter E.		46 27 34	3026	44 57 53	3032	43 28 20	3037	41 58 53	3043
s E.		48 33 42	2918	47 1 46	2923	45 29 57	2927	43 58 13	2931
gulus E.		62 34 26	3064	61 5 33	3069	59 36 46	3074	58 8 5	3079
rietis W.		61 12 10	3160	62 39 7	3159	64 6 5	3158	65 33 4	3158
ebaran W.		30 59 40	3244	32 24 57	3232	33 50 28	3222	35 16 11	3214
iter E.		34 33 16	3067	33 4 26	3072	31 35 42	3077	30 7 4	3082
s E.		36 20 44	2947	34 49 25	2950	33 18 9	2951	31 46 55	2952
gulus E.		50 45 56	3096	49 17 42	3099	47 49 31	3101	46 21 23	3103
rietis W.		72 48 18	3151	74 15 26	3148	75 42 37	3147	77 9 50	3144
ebaran W.		42 27 7	3178	43 53 43	3172	45 20 25	3167	46 47 14	3161
iter E.		22 45 37	3115	21 17 46	3126	19 50 8	3138	18 22 45	3153
s E.		24 11 2	2955	22 39 53	2955	21 8 44	2953	19 37 32	2950
gulus E.		39 1 16	3111	37 33 20	3112	36 5 25	3114	34 37 32	3114
ca ng E.		92 59 15	3087	91 30 50	3087	90 2 24	3085	88 33 56	3084
arn E.		117 59 7	3096	116 30 53	3095	115 2 37	3093	113 34 19	3091
rietis W.		84 26 42	3130	85 54 15	3127	87 21 52	3123	88 49 34	3119
ebaran W.		54 3 0	3134	55 30 29	3129	56 58 4	3123	58 25 46	3118
gulus E.		27 18 28	3124	25 50 47	3127	24 23 10	3132	22 55 39	3137
ca ng E.		81 11 5	3073	79 42 22	3069	78 13 35	3066	76 44 44	3063
arn E.		106 12 10	3078	104 43 34	3076	103 14 55	3073	101 46 12	3069
ebaran W.		65 45 53	3089	67 14 16	3084	68 42 45	3078	70 11 21	3073
lux W.		21 30 58	3050	23 0 9	3044	24 29 27	3038	25 58 53	3032
ca ng E.		69 19 24	3043	67 50 5	3039	66 20 40	3034	64 51 9	3030
arn E.		94 21 23	3048	92 52 9	3043	91 22 50	3038	89 53 25	3033
ebaran W.		77 36 10	3042	79 5 31	3037	80 34 58	3031	82 4 33	3024
lux W.		33 27 54	3002	34 58 4	2995	36 28 23	2989	37 58 49	2982
iter W.		14 12 18	3124	15 39 58	3088	17 8 22	3061	18 37 20	3038
ca ng E.		57 22 8	3004	55 52 0	2999	54 21 46	2994	52 51 26	2988
arn E.		82 24 43	3006	80 54 38	3001	79 24 27	2994	77 54 7	2989
ebaran W.		89 34 27	2993	91 4 49	2985	92 35 20	2979	94 5 59	2972
lux W.		45 33 1	2950	47 4 16	2943	48 35 40	2937	50 7 12	2930
iter W.		26 8 6	2960	27 39 9	2948	29 10 27	2937	30 41 59	2927
s W.		24 56 40	2836	26 30 21	2831	28 4 9	2825	29 38 5	2818
ca ng E.		45 17 53	2959	43 46 49	2954	42 15 38	2948	40 44 20	2942
arn E.		70 20 40	2959	68 49 36	2952	67 18 23	2946	65 47 2	2938
ares E.		91 8 23	2949	89 37 6	2942	88 5 40	2935	86 34 6	2928
lux W.		57 47 4	2895	59 19 29	2887	60 52 4	2880	62 24 48	2873
iter W.		38 22 46	2880	39 55 31	2871	41 28 27	2862	43 1 34	2854
s W.		37 29 48	2786	39 4 34	2780	40 39 28	2773	42 14 31	2766
ca ng E.		21 33 53	2973	23 4 40	2955	24 35 49	2940	26 7 17	2927
arn W.		33 5 59	2913	31 33 57	2908	30 1 49	2904	28 29 35	2899

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^b .	P. L. of diff.	VI ^b .	P. L. of diff.	IX ^b .
21	Saturn E.	64 15 32	2932	62 43 54	2927	61 12 9	2920	59 40
	Antares E.	85 2 23	2922	83 30 32	2915	81 58 32	2909	80 26
22	Pollux W.	63 57 42	2865	65 30 46	2858	67 3 59	2850	68 37
	Jupiter W.	44 34 52	2845	46 8 21	2837	47 42 1	2828	49 15
	Mars W.	43 49 44	2760	45 25 4	2753	47 0 34	2746	48 36
	Regulus W.	27 39 1	2914	29 11 2	2902	30 43 19	2890	32 15
	Spica μ E.	26 57 15	2895	25 24 50	2891	23 52 20	2887	22 19
	Saturn E.	51 58 35	2878	50 25 48	2872	48 52 53	2865	47 19
	Antares E.	72 43 25	2865	71 10 21	2858	69 37 8	2850	68 3
23	Pollux W.	76 26 50	2802	78 1 15	2795	79 35 50	2786	81 10
	Jupiter W.	57 7 52	2778	58 42 49	2769	60 17 58	2760	61 53
	Mars W.	56 36 53	2702	58 13 30	2694	59 50 18	2686	61 27
	Regulus W.	40 1 56	2827	41 35 49	2818	43 9 54	2808	44 44
	Saturn E.	39 32 16	2824	37 58 19	2817	36 24 13	2811	34 49
	Antares E.	60 14 19	2803	58 39 55	2795	57 5 20	2786	55 30
	Venus E.	125 47 36	3271	124 22 51	3261	122 57 54	3251	121 32
24	Jupiter W.	69 52 53	2707	71 29 24	2698	73 6 7	2688	74 43
	Mars W.	69 34 46	2638	71 12 49	2629	72 51 4	2621	74 29
	Regulus W.	52 38 53	2749	54 14 28	2739	55 50 16	2729	57 26
	Saturn E.	26 56 50	2778	25 21 53	2774	23 46 51	2772	22 11
	Antares E.	47 33 58	2735	45 58 4	2726	44 21 58	2717	42 45
	Venus E.	114 24 3	3190	112 57 42	3179	111 31 8	3169	110 4
25	Jupiter W.	82 50 55	2630	84 29 9	2620	86 7 37	2610	87 46
	Mars W.	82 44 47	2567	84 24 28	2557	86 4 22	2547	87 44
	Regulus W.	65 29 44	2668	67 7 7	2657	68 44 44	2647	70 22
	Spica μ W.	11 40 11	2789	13 14 53	2782	14 50 24	2770	16 26
	Antares E.	34 41 3	2660	33 3 29	2651	31 25 43	2641	29 47
	Venus E.	102 47 12	3102	101 19 5	3091	99 50 44	3079	98 22
	SUN E.	123 40 3	3022	122 10 17	3009	120 40 15	2997	119 9
26	Mars W.	96 8 35	2486	97 50 8	2476	99 31 55	2465	101 13
	Jupiter W.	96 3 24	2546	97 43 33	2535	99 23 58	2524	101 4
	Regulus W.	78 35 34	2581	80 14 55	2569	81 54 32	2558	83 34
	Spica μ W.	24 35 5	2603	26 13 56	2587	27 53 9	2573	29 32
	Antares E.	21 34 26	2583	19 55 8	2574	18 15 37	2566	16 35
	α Aquilæ E.	76 5 50	3474	74 44 57	3478	73 24 8	3482	72 3
	Venus E.	90 55 35	3006	89 25 30	2994	87 55 10	2982	86 24
27	SUN E.	111 34 52	2924	110 3 4	2912	108 31 0	2899	106 58
	Jupiter W.	109 31 55	2455	111 14 11	2444	112 56 43	2433	114 39
	Spica μ W.	37 55 9	2492	39 36 34	2478	41 18 18	2465	43 0
	Saturn W.	13 14 50	2633	14 53 0	2586	16 32 14	2553	18 12
	α Aquilæ E.	65 22 16	3552	64 2 49	3571	62 43 43	3594	61 25
	Venus E.	78 47 33	2904	77 15 19	2891	75 42 48	2877	74 10
	SUN E.	99 12 51	2821	97 38 51	2808	96 4 34	2795	94
28	Spica μ W.	51 35 9	2387	53 19 2	2374	55 3 14	2361	53 14
	Saturn W.	26 41 1	2418	28 24 10	2400	30 7		
	Venus E.	66 21 41	2797	64 47 9	2784	63 12		
	SUN E.	86 32 43	2714	84 56 22	2701	83 10		

MEAN TIME.

LUNAR DISTANCES.

Star's Name and Position.		Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
turn	E.	58 8 12	2906	56 36 1	2899	55 3 41	2892	53 31 12	2886
tares	E.	78 54 7	2895	77 21 41	2887	75 49 5	2880	74 16 20	2872
llux	W.	70 10 55	2835	71 44 38	2826	73 18 32	2818	74 52 36	2811
piter	W.	50 49 54	2811	52 24 7	2803	53 58 31	2795	55 33 6	2786
rs	W.	50 12 2	2731	51 48 0	2724	53 24 8	2717	55 0 26	2710
gulus	W.	33 48 37	2869	35 21 36	2857	36 54 50	2847	38 28 17	2838
ica m	E.	20 47 8	2886	19 14 31	2887	17 41 55	2890	16 9 23	2896
turn	E.	45 46 36	2851	44 13 14	2845	42 39 44	2837	41 6 4	2831
tares	E.	66 30 12	2835	64 56 29	2827	63 22 36	2819	61 48 33	2811
llux	W.	82 45 33	2769	84 20 42	2760	85 56 3	2750	87 31 36	2741
piter	W.	63 28 49	2743	65 4 32	2734	66 40 27	2725	68 16 34	2716
rs	W.	63 4 24	2671	64 41 43	2663	66 19 13	2655	67 56 54	2646
gulus	W.	46 18 43	2788	47 53 26	2778	49 28 22	2769	51 3 31	2759
turn	E.	33 15 36	2798	31 41 5	2792	30 6 27	2787	28 31 42	2782
tares	E.	53 55 37	2769	52 20 29	2761	50 45 10	2753	49 9 40	2744
nus	E.	120 7 25	3231	118 41 53	3221	117 16 9	3210	115 50 12	3200
piter	W.	76 20 11	2669	77 57 33	2660	79 35 7	2650	81 12 54	2640
rs	W.	76 8 9	2603	77 47 0	2594	79 26 3	2585	81 5 19	2576
gulus	W.	59 2 31	2709	60 38 59	2699	62 15 40	2689	63 52 35	2678
turn	E.	20 36 41	2773	19 1 38	2777	17 26 40	2785	15 51 53	2799
tares	E.	41 9 10	2698	39 32 27	2689	37 55 32	2679	36 18 24	2669
nus	E.	108 37 22	3147	107 10 9	3137	105 42 44	3125	104 15 5	3114
piter	W.	89 25 14	2588	91 4 25	2578	92 43 50	2567	94 23 30	2557
rs	W.	89 24 51	2528	91 5 26	2518	92 46 14	2507	94 27 17	2497
gulus	W.	72 0 41	2625	73 39 2	2615	75 17 37	2603	76 56 28	2592
ica m	W.	18 3 25	2672	19 40 42	2652	21 18 26	2635	22 56 34	2618
tares	E.	28 9 30	2621	26 31 4	2611	24 52 24	2601	23 13 31	2593
nus	E.	96 53 20	3056	95 24 17	3043	93 54 58	3031	92 25 24	3019
n	E.	117 39 28	2973	116 8 42	2961	114 37 41	2949	113 6 24	2937
rs	W.	102 56 14	2443	104 38 47	2432	106 21 36	2419	108 4 44	2407
piter	W.	102 45 34	2502	104 26 45	2490	106 8 12	2479	107 49 55	2467
gulus	W.	85 14 34	2534	86 55 0	2523	88 35 41	2511	90 16 39	2499
ica m	W.	31 12 32	2545	32 52 43	2531	34 33 13	2517	36 14 2	2505
tares	E.	14 56 4	2553	13 16 5	2551	11 36 2	2551	9 56 0	2556
Aquilæ	E.	70 42 47	3497	69 22 20	3507	68 2 4	3520	66 42 2	3535
nus	E.	84 53 43	2956	83 22 35	2943	81 51 11	2930	80 19 30	2917
n	E.	105 26 4	2873	103 53 10	2861	102 20 1	2847	100 46 34	2835
piter	W.	116 22 37	2409	118 5 59	2398	119 49 37	2385	121 33 33	2373
ica m	W.	44 42 42	2439	46 25 21	2426	48 8 19	2413	49 51 35	2400
turn	W.	19 52 54	2498	21 34 10	2475	23 15 59	2454	24 58 17	2436
Aquilæ	E.	60 6 50	3650	58 49 10	3683	57 32 5	3720	56 15 39	3763
nus	E.	72 36 55	2850	71 3 32	2837	69 29 52	2824	67 55 55	2811
n	E.	92 55 8	2768	91 19 58	2754	89 44 30	2741	88 8 45	2728
	W.	58 32 31	2337	60 17 37	2324	62 3 1	2312	63 48 43	2300
		3 36 0	2354	35 20 41	2340	37 5 43	2326	38 51 5	2312
		1 49	2744	58 26 7	2731	56 50 9	2718	55 13 53	2706
		34	2662	78 28 3	2649	76 50 14	2635	75 12 7	2623

CONFIGURATIONS OF THE SATELLITES OF JUPITER

At 11^h 30^m, MEAN TIME.

Day of the Month.	West.	East.
1		○ 1 4
2		3 2 4 1 ○
3	4 3	○ 2 1
4	4	3 1 ○ 2
5	4	2 ○ 3 1
6	4	1 2 ○ 3
7	4	○ 1 2 3
8	1 ● 4	○ 3
9		3 2 4 1 ○
10	3	○ 2 1 4
11		3 1 ○ 2 4
12		2 ○ 3 1 4
13		1 2 ○ 3 4
14		○ 1 2 3
15		1 ○ 2 3 4
16	1 ○ 3 2	○ 4
17	● 2 3	○ 1 4
18	○ 4 3	○ 2 1
19	● 3 4	○ 1 2 3
20	4	○ 1 2 3
21	4	○ 1 2 3
22	4	○ 1 2 3
23	4	○ 1 2 3
24	4 3	○ 1 2
25		2 1 ○ 4 3
26		2 1 ○ 4 3
27		2 1 ○ 4 3
28		○ 1 2 3 4

This Table represents, at 11^h 30^m after *Mean Noon* of each day of the month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the configurations. The numerals 1, 2, 3, and 4, annexed to the points, serve to denote the positions of the Satellites, and their positions are such as to indicate the directions of their motion. The points to be considered as *towards the numerals*. When a Satellite is placed above or below the centre of the numeral, it denotes that the Satellite placed by the side of the numeral is either *behind* the disc, or in the *front* of it.

ECLIPSES OF THE SATELLITES OF JUPITER.

DATE.	Day of the Month.	Mean Time. h m s	Sidereal Time. h m s	PHASE as seen in an inverting Telescope.
	5	0 10 43.7	21 12 27.6	Em.
	6	18 39 13.9	15 47 56.4	Em.
	8*	13 7 42.9	10 23 24.1	Em.
	10*	7 36 14.2	4 58 54.0	Em.
	12	2 4 44.3	23 34 22.7	Em.
	13	20 33 17.0	18 9 54.1	Em.
	15*	15 1 47.7	12 45 23.4	Em.
	17*	9 30 21.2	7 20 55.6	Em.
	19	3 58 53.1	1 56 26.2	Em.
	20	22 27 27.5	20 31 59.3	Em.
	22*	16 56 0.1	15 7 30.5	Em.
	24*	11 24 35.6	9 43 4.7	Em.
	26	5 53 9.6	4 18 37.4	Em.
	28	0 21 46.0	22 54 12.4	Em.
	3*	6 51 39.2	3 46 35.8	Em.
	6	20 9 35.2	17 18 32.5	Em.
	10*	9 28 38.5	6 51 36.8	Em.
	13	22 46 35.6	20 23 34.6	Em.
	17*	12 5 40.5	9 56 40.5	Em.
	21	1 23 41.6	23 28 42.3	Em.
	24*	14 42 47.2	13 1 48.9	Em.
	28	4 0 51.2	2 33 53.6	Em.
I.	5	3 52 18.5	0 54 38.7	Em.
	12*	7 50 56.8	5 21 32.1	Em.
	19*	11 49 39.6	9 48 30.0	Em.
	26*	15 48 13.1	14 15 18.6	Em.
7.	10*	10 52 25.7	8 15 37.7	Em.
	27	0 11 27.2	22 39 55.3	Im.
	27	4 54 52.2	3 24 6.9	Em.

APPROXIMATE SIDEREAL TIMES
OF THE
OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER
AND OF THE
TRANSITS OF THE SATELLITES AND THEIR SHADOWS
OVER THE DISC OF THE PLANET.

Satellite.	OCCULTATIONS.		TRANSITS OF SATELLITES.		TRANSITS OF SHADOWS.	
	Immersion.	Emersion.	Ingress.	Egress.	Ingress.	Egress.
I.	d h m	d h m	d h m	d h m	d h m	d h m
	1* 5 44	1* 8 4	2* 3 1	2* 5 22	2* 3 2	2* 5 22
	3 0 16	3* 2 37	4 21 34	4 23 55	4 21 37	4 23 55
	4 18 49		5 16 7	5 18 27	5 16 13	5 18 27
	6* 13 22		7* 10 40	7* 13 0	7* 10 49	7* 13 0
	8* 7 55		9* 5 13	9* 7 33	9* 5 24	9* 7 33
	10 2 28		11 23 46	11 2 7	11 0 0	11 2 7
	11 21 1		12 18 19	12 20 40	12 18 36	12 20 40
	13* 15 34	In	14* 12 52	14* 15 13	14* 13 11	14* 15 13
	15* 10 7	the	16* 7 25	16* 9 46	16* 7 47	16* 9 46
	17* 4 40		18 1 58	18* 4 19	18 2 23	18* 4 19
	19 23 13	Shadow.	19 20 31	20 22 52	19 20 58	20 22 52
	20 17 46		21* 15 5	21 17 25	21* 15 34	21 17 25
	22* 12 19		23* 9 38	23* 11 59	23* 10 10	23* 11 59
	24* 6 52		25 4 11	25* 6 32	25* 4 45	25* 6 32
	26 1 25		27 22 45	27 1 5	27 23 21	27 1 5
	27 19 58		28 17 18	28 19 39	28 17 57	28 19 39
II.	3 0 46		1* 6 1	1* 8 58	1* 6 1	1* 8 58
	6* 14 7	In	4 19 21	5 22 18	4 19 31	5 22 18
	10* 3 29		8* 8 42	8* 11 39	8* 9 3	8* 11 39
	13 16 51	the	12 22 1	12 0 58	12 22 33	12 0 58
	17* 6 13		15* 11 22	15* 14 19	15* 12 5	15* 14 19
	20 19 35	Shadow.	19 0 43	19 3 40	19 1 36	19 3 40
	24* 8 59		22* 14 4	22 17 1	22* 15 7	22 17 1
	27 22 21		26 3 26	26* 6 22	26 4 38	26* 6 22
III.	4 20 55	In	1* 6 53	1* 10 37	1* 6 53	1* 10 37
	12 0 39	the	8* 10 37	8* 14 21	8* 11 20	8* 14 21
	19* 4 24		15* 14 23	15 18 6	15 15 48	15 18 6
	26* 8 12	Shadow.	22 18 10	22 21 53	22 20 15	22 21 53
IV.	10 1 23	In the Shadow.	1 16 6	2 21 2	1 16 12	2 21 2
	26 16 50	26 21 45	18* 7 24	18* 12 19	18* 11 18	18* 12 19

For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.		Mean Equinoctial Time, adding 0 ^h .020613. Days.	From Mean Noon of January 1.	
At Mean Midnight, Logarithm of							Day of the Year.	Fraction of the Year.
A	B	C	D					
-1.1052	+1.1729	-8.9372	-0.8707	^h 3	^m 13 ^s 32.38	316	31	.085
1.1133	1.1656	8.9217	0.8721	3	9 36.46	317	32	.088
1.1211	1.1580	8.9058	0.8735	3	5 40.54	318	33	.090
-1.1286	+1.1502	-8.8894	-0.8749	3	1 44.63	319	34	.093
1.1359	1.1421	8.8726	0.8763	2	57 48.72	320	35	.096
1.1429	1.1337	8.8553	0.8777	2	53 52.81	321	36	.099
-1.1497	+1.1250	-8.8375	-0.8790	2	49 56.91	322	37	.101
1.1562	1.1160	8.8191	0.8804	2	46 1.00	323	38	.104
1.1625	1.1066	8.8000	0.8818	2	42 5.10	324	39	.107
-1.1686	+1.0969	-8.7803	-0.8831	2	38 9.19	325	40	.110
1.1744	1.0869	8.7599	0.8844	2	34 13.29	326	41	.112
1.1801	1.0765	8.7388	0.8857	2	30 17.38	327	42	.115
-1.1855	+1.0657	-8.7169	-0.8870	2	26 21.46	328	43	.118
1.1907	1.0545	8.6940	0.8883	2	22 25.55	329	44	.120
1.1957	1.0429	8.6701	0.8896	2	18 29.64	330	45	.123
-1.2006	+1.0308	-8.6451	-0.8908	2	14 33.72	331	46	.126
1.2052	1.0182	8.6188	0.8920	2	10 37.81	332	47	.129
1.2097	1.0052	8.5911	0.8932	2	6 41.90	333	48	.131
-1.2140	+0.9916	-8.5618	-0.8944	2	2 45.99	334	49	.134
1.2181	0.9774	8.5308	0.8955	1	58 50.08	335	50	.137
1.2220	0.9626	8.4979	0.8966	1	54 54.17	336	51	.140
-1.2258	+0.9472	-8.4626	-0.8977	1	50 58.27	337	52	.142
1.2294	0.9311	8.4244	0.8988	1	47 2.37	338	53	.145
1.2328	0.9142	8.3829	0.8998	1	43 6.46	339	54	.148
-1.2361	+0.8965	-8.3377	-0.9008	1	39 10.56	340	55	.151
1.2392	0.8779	8.2880	0.9018	1	35 14.65	341	56	.153
1.2422	0.8583	8.2322	0.9028	1	31 18.74	342	57	.156
1.2450	0.8377	8.1682	0.9037	1	27 22.83	343	58	.159
-1.2476	+0.8160	-8.0938	-0.9046	1	23 26.91	344	59	.162

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.		
		h m s	s	° ' "	"	m s	m s
Wed.	1	22 48 57.77	9.346	S. 7 32 30.2	57.14	1 5.34	12 36.31
Thur.	2	22 52 42.07	9.326	7 9 38.8	57.40	1 5.27	12 24.09
Frid.	3	22 56 25.90	9.307	6 46 41.1	57.64	1 5.20	12 11.39
Sat.	4	23 0 9.26	9.288	6 23 37.8	57.86	1 5.13	11 58.24
Sun.	5	23 3 52.18	9.270	6 0 29.1	58.07	1 5.07	11 44.63
Mon.	6	23 7 34.66	9.253	5 37 15.4	58.26	1 5.01	11 30.62
Tues.	7	23 11 16.73	9.236	5 13 57.2	58.43	1 4.95	11 16.18
Wed.	8	23 14 58.39	9.220	4 50 34.9	58.58	1 4.89	11 1.32
Thur.	9	23 18 39.67	9.206	4 27 8.9	58.73	1 4.84	10 46.10
Frid.	10	23 22 20.61	9.191	4 3 39.5	58.85	1 4.79	10 30.54
Sat.	11	23 26 1.19	9.177	3 40 7.2	58.95	1 4.74	10 14.61
Sun.	12	23 29 41.43	9.164	3 16 32.4	59.04	1 4.70	9 58.34
Mon.	13	23 33 21.37	9.153	2 52 55.5	59.11	1 4.66	9 41.76
Tues.	14	23 37 1.03	9.140	2 29 16.8	59.17	1 4.62	9 24.91
Wed.	15	23 40 40.40	9.130	2 5 36.8	59.20	1 4.58	9 7.77
Thur.	16	23 44 19.52	9.121	1 41 55.9	59.23	1 4.55	8 50.38
Frid.	17	23 47 58.42	9.112	1 18 14.3	59.24	1 4.52	8 32.76
Sat.	18	23 51 37.11	9.104	0 54 32.5	59.24	1 4.49	8 14.96
Sun.	19	23 55 15.61	9.098	0 30 50.8	59.22	1 4.47	7 56.95
Mon.	20	23 58 53.95	9.092	S. 0 7 9.5	59.19	1 4.45	7 38.78
Tues.	21	0 2 32.16	9.088	N. 0 16 31.1	59.14	1 4.43	7 20.50
Wed.	22	0 6 10.26	9.083	0 40 10.4	59.08	1 4.42	7 2.10
Thur.	23	0 9 48.25	9.081	1 3 48.4	59.01	1 4.41	6 43.59
Frid.	24	0 13 26.19	9.080	1 27 24.7	58.93	1 4.40	6 25.04
Sat.	25	0 17 4.11	9.079	1 50 59.0	58.83	1 4.39	6 6.45
Sun.	26	0 20 42.00	9.079	2 14 30.8	58.72	1 4.39	5 47.83
Mon.	27	0 24 19.90	9.080	2 38 0.0	58.58	1 4.39	5 29.24
Tues.	28	0 27 57.83	9.083	3 1 26.0	58.45	1 4.39	5 10.66
Wed.	29	0 31 35.82	9.085	3 24 48.8	58.29	1 4.39	4 52.14
Thur.	30	0 35 13.86	9.089	3 48 7.7	58.12	1 4.40	4 33.67
Frid.	31	0 38 51.99	9.093	4 11 22.5	57.93	1 4.41	4 15.30
Sat.	32	0 42 30.22		N. 4 34 32.8		1 4.43	3 57.02

* Mean Time of the Semidiameter

--- subtracting 0.18 from the Sidereal

AT MEAN NOON.

	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Right Ascension.	Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
d.	1	22 48 55.80	S. 7 32 42.1	16 9.1	12 36.42	22 36 19.38
ar.	2	22 52 40.14	7 9 50.6	16 8.8	12 24.20	22 40 15.94
d.	3	22 56 24.00	6 46 52.8	16 8.6	12 11.50	22 44 12.50
	4	23 0 7.40	6 23 49.3	16 8.3	11 58.35	22 48 9.05
n.	5	23 3 50.36	6 0 40.4	16 8.0	11 44.76	22 52 5.60
n.	6	23 7 32.88	5 37 26.6	16 7.8	11 30.73	22 56 2.15
es.	7	23 11 14.99	5 14 8.1	16 7.5	11 16.29	22 59 58.70
d.	8	23 14 56.69	4 50 45.7	16 7.3	11 1.44	23 3 55.25
ur.	9	23 18 38.02	4 27 19.4	16 7.0	10 46.22	23 7 51.80
d.	10	23 22 19.00	4 3 49.8	16 6.8	10 30.65	23 11 48.35
n.	11	23 25 59.62	3 40 17.3	16 6.5	10 14.72	23 15 44.90
n.	12	23 29 39.91	3 16 42.2	16 6.2	9 58.45	23 19 41.46
n.	13	23 33 19.89	2 53 5.1	16 6.0	9 41.87	23 23 38.02
es.	14	23 36 59.59	2 29 26.1	16 5.7	9 25.02	23 27 34.57
d.	15	23 40 39.01	2 5 45.9	16 5.5	9 7.88	23 31 31.13
ur.	16	23 44 18.18	1 42 4.6	16 5.2	8 50.49	23 35 27.69
d.	17	23 47 57.12	1 18 22.8	16 4.9	8 32.87	23 39 24.25
n.	18	23 51 35.86	0 54 40.6	16 4.7	8 15.06	23 43 20.80
n.	19	23 55 14.40	0 30 58.6	16 4.4	7 57.05	23 47 17.35
n.	20	23 58 52.79	S. 0 7 17.1	16 4.1	7 38.88	23 51 13.91
es.	21	0 2 31.05	N. 0 16 23.8	16 3.8	7 20.60	23 55 10.45
d.	22	0 6 9.19	0 40 3.5	16 3.6	7 2.19	23 59 7.00
ur.	23	0 9 47.23	1 3 41.8	16 3.3	6 43.68	0 3 3.55
d.	24	0 13 25.22	1 27 18.4	16 3.0	6 25.12	0 7 0.10
n.	25	0 17 3.18	1 50 53.0	16 2.7	6 6.53	0 10 56.65
n.	26	0 20 41.12	2 14 25.1	16 2.4	5 47.91	0 14 53.21
n.	27	0 24 19.07	2 37 54.6	16 2.2	5 29.31	0 18 49.76
es.	28	0 27 57.05	3 1 21.0	16 1.9	5 10.73	0 22 46.32
d.	29	0 31 35.08	3 24 44.0	16 1.6	4 52.20	0 26 42.88
ur.	30	0 35 13.17	3 48 3.3	16 1.3	4 33.73	0 30 39.44
d.	31	0 38 51.35	4 11 18.4	16 1.0	4 15.35	0 34 36.00
n.	32	0 42 29.62	N. 4 34 29.0	16 0.7	3 57.07	0 38 32.55

* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	340 44 40.3	S. 0.56	9.9963260	16 9.6	16 14.6	59 18.3	59 18.3
2	341 44 48.5	0.62	9.9964392	16 19.1	16 23.1	59 53.1	59 53.1
3	342 44 55.2	0.65	9.9965533	16 26.5	16 28.9	60 20.0	60 20.0
4	343 45 0.1	0.64	9.9966678	16 30.5	16 31.0	60 34.9	60 34.9
5	344 45 3.3	0.61	9.9967828	16 30.5	16 28.8	60 34.7	60 34.7
6	345 45 4.6	0.55	9.9968982	16 26.0	16 22.3	60 18.5	60 18.5
7	346 45 4.1	0.47	9.9970138	16 17.5	16 12.0	59 47.3	59 47.3
8	347 45 1.4	0.36	9.9971296	16 5.7	15 58.9	59 3.9	59 3.9
9	348 44 56.8	0.23	9.9972457	15 51.8	15 44.5	58 12.9	58 12.9
10	349 44 50.3	S. 0.10	9.9973621	15 37.2	15 30.0	57 19.1	57 19.1
11	350 44 41.5	N. 0.04	9.9974787	15 23.0	15 16.5	56 27.2	56 27.2
12	351 44 30.5	0.17	9.9975955	15 10.4	15 4.9	55 41.0	55 41.0
13	352 44 17.3	0.29	9.9977128	15 0.1	14 55.9	55 3.1	55 3.1
14	353 44 2.0	0.40	9.9978307	14 52.4	14 49.5	54 34.7	54 34.7
15	354 43 44.2	0.48	9.9979492	14 47.4	14 45.9	54 16.5	54 16.5
16	355 43 24.2	0.54	9.9980684	14 45.1	14 44.9	54 8.1	54 8.1
17	356 43 1.8	0.56	9.9981883	14 45.4	14 46.4	54 9.2	54 9.2
18	357 42 37.2	0.56	9.9983092	14 47.9	14 49.9	54 18.3	54 18.3
19	358 42 10.3	0.53	9.9984309	14 52.3	14 55.0	54 34.4	54 34.4
20	359 41 41.2	0.46	9.9985535	14 58.2	15 1.5	54 56.0	54 56.0
21	0 41 10.1	0.37	9.9986770	15 5.1	15 8.8	55 21.3	55 21.3
22	1 40 36.8	0.26	9.9988015	15 12.7	15 16.7	55 49.5	55 49.5
23	2 40 1.4	0.14	9.9989269	15 20.8	15 24.8	56 19.0	56 19.0
24	3 39 24.2	N. 0.02	9.9990532	15 28.9	15 33.0	56 48.9	56 48.9
25	4 38 45.2	S. 0.11	9.9991801	15 36.9	15 40.9	57 18.3	57 18.3
26	5 38 4.3	0.23	9.9993077	15 44.7	15 48.5	57 46.7	57 46.7
27	6 37 21.8	0.34	9.9994357	15 52.1	15 55.6	58 14.0	58 14.0
28	7 36 37.5	0.43	9.9995641	15 59.0	16 2.3	58 39.3	58 39.3
29	8 35 51.4	0.48	9.9996925	16 5.4	16 8.2	59 2.6	59 2.6
30	9 35 3.5	0.52	9.9998209	16 10.7	16 12.9	59 22.2	59 22.2
31	10 34 13.8	0.53	9.9999490	16 14.7	16 15.9	59 36.8	59 36.8
32	11 33 22.2	S. 0.50	0.0000768	16 16.6	16 16.7	59 43.9	59 43.9

MEAN TIME.

		THE MOON'S														
Day of the Month.		Longitude.				Latitude.				Age.		Meridian				
		Noon.		Midnight.		Noon.		Midnight.		Noon.	Passage.					
		°	'	''	°	'	''	°	'	''	d	h	m			
ed.	1	267	13	37.6	274	21	58.9	S. 4	9	15.1	S. 4	29	33.3	24.1	20	1.9
ur.	2	281	35	8.4	288	52	42.9	4	45	48.5	4	57	36.8	25.1	21	5.7
id.	3	296	14	7.2	303	38	38.0	5	4	37.5	5	6	36.6	26.1	22	7.5
t.	4	311	5	22.8	318	33	20.7	5	3	26.2	4	55	6.0	27.1	23	5.6
n.	5	326	1	26.0	333	28	30.0	4	41	42.7	4	23	34.3	28.1	23	59.6
on.	6	340	53	24.8	348	15	5.4	4	1	2.7	3	34	37.7	29.1	δ	
es.	7	355	32	33.2	2	44	57.7	3	4	54.2	2	32	31.4	0.6	0	50.2
ed.	8	9	51	38.5	16	52	5.9	1	58	7.1	1	22	22.6	1.6	1	38.6
ur.	9	23	46	0.8	30	33	15.4	S. 0	45	55.3	S. 0	9	21.5	2.6	2	25.9
id.	10	37	13	52.5	43	48	0.8	N. 0	26	47.2	N. 1	2	1.0	3.6	3	13.3
t.	11	50	15	59.5	56	38	11.9	1	35	55.5	2	8	8.1	4.6	4	1.7
n.	12	62	55	7.1	69	7	16.9	2	38	21.3	3	6	19.2	5.6	4	51.4
on.	13	75	15	17.2	81	19	43.2	3	31	49.5	3	54	40.6	6.6	5	42.4
es.	14	87	21	12.8	93	20	22.5	4	14	44.5	4	31	52.5	7.6	6	34.2
ed.	15	99	17	49.5	105	14	8.6	4	45	58.5	4	56	57.6	8.6	7	25.8
ur.	16	111	9	54.7	117	5	39.1	5	4	44.2	5	9	15.2	9.6	8	16.2
d.	17	123	1	52.3	128	59	1.2	5	10	27.4	5	8	19.2	10.6	9	4.6
t.	18	134	57	31.4	140	57	44.6	5	2	49.0	4	53	57.7	11.6	9	50.8
n.	19	147	0	0.6	153	4	35.2	4	41	46.9	4	26	21.0	12.6	10	35.0
on.	20	159	11	41.9	165	21	31.5	4	7	44.5	3	46	6.6	13.6	11	17.6
es.	21	171	34	12.3	177	49	49.5	3	21	37.1	2	54	29.0	14.6	11	59.5
ed.	22	184	8	27.3	190	30	8.0	2	24	58.0	1	53	23.1	15.6	12	41.7
ur.	23	196	54	53.3	203	22	43.5	1	20	4.5	N. 0	45	26.3	16.6	13	25.2
id.	24	209	53	38.6	216	27	39.3	N. 0	9	53.6	S. 0	26	5.2	17.6	14	11.1
t.	25	223	4	46.1	229	44	58.9	S. 1	2	1.8	1	37	25.9	18.6	15	0.6
n.	26	236	28	19.4	243	14	47.8	2	11	46.3	2	44	32.7	19.6	15	54.4
on.	27	250	4	25.7	256	57	10.7	3	15	14.2	3	43	21.1	20.6	16	52.5
es.	28	263	53	2.5	270	51	57.3	4	8	24.9	4	29	59.5	21.6	17	53.8
ed.	29	277	53	48.6	284	58	26.8	4	47	39.9	5	1	5.9	22.6	18	56.1
ur.	30	292	5	39.7	299	15	8.8	5	9	59.3	5	14	8.1	23.6	19	56.8
id.	31	306	26	32.5	313	39	23.6	5	13	22.8	5	7	41.0	24.6	20	54.4
t.	32	320	53	11.5	328	7	20.2	S. 4	57	5.8	S. 4	41	46.5	25.6	21	48.2

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	340 44 40.3	S. 0.56	9.9963260	16 9.6	16 14.6	59 18.3	59 3
2	341 44 48.5	0.62	9.9964392	16 19.1	16 23.1	59 53.1	60
3	342 44 55.2	0.65	9.9965533	16 26.5	16 28.9	60 20.0	60 2
4	343 45 0.1	0.64	9.9966678	16 30.5	16 31.0	60 34.9	60 3
5	344 45 3.3	0.61	9.9967828	16 30.5	16 28.8	60 34.7	60 2
6	345 45 4.6	0.55	9.9968982	16 26.0	16 22.3	60 18.5	60
7	346 45 4.1	0.47	9.9970138	16 17.5	16 12.0	59 47.3	59 2
8	347 45 1.4	0.36	9.9971296	16 5.7	15 58.9	59 3.9	58 3
9	348 44 56.8	0.23	9.9972457	15 51.8	15 44.5	58 12.9	57 4
10	349 44 50.3	S. 0.10	9.9973621	15 37.2	15 30.0	57 19.1	56 5
11	350 44 41.5	N. 0.04	9.9974787	15 23.0	15 16.5	56 27.2	56
12	351 44 30.5	0.17	9.9975955	15 10.4	15 4.9	55 41.0	55 2
13	352 44 17.3	0.29	9.9977128	15 0.1	14 55.9	55 3.1	54 4
14	353 44 2.0	0.40	9.9978307	14 52.4	14 49.5	54 34.7	54 2
15	354 43 44.2	0.48	9.9979492	14 47.4	14 45.9	54 16.5	54 1
16	355 43 24.2	0.54	9.9980684	14 45.1	14 44.9	54 8.1	54
17	356 43 1.8	0.56	9.9981883	14 45.4	14 46.4	54 9.2	54 1
18	357 42 37.2	0.56	9.9983092	14 47.9	14 49.9	54 18.3	54 2
19	358 42 10.3	0.53	9.9984309	14 52.3	14 55.0	54 34.4	54 4
20	359 41 41.2	0.46	9.9985535	14 58.2	15 1.5	54 56.0	55
21	0 41 10.1	0.37	9.9986770	15 5.1	15 8.8	55 21.3	55 3
22	1 40 36.8	0.26	9.9988015	15 12.7	15 16.7	55 49.5	56
23	2 40 1.4	0.14	9.9989269	15 20.8	15 24.8	56 19.0	56 3
24	3 39 24.2	N. 0.02	9.9990532	15 28.9	15 33.0	56 48.9	57
25	4 38 45.2	S. 0.11	9.9991801	15 36.9	15 40.9	57 18.3	57 2
26	5 38 4.3	0.23	9.9993077	15 44.7	15 48.5	57 46.7	58
27	6 37 21.8	0.34	9.9994357	15 52.1	15 55.6	58 14.0	58 2
28	7 36 37.5	0.43	9.9995641	15 59.0	16 2.3	58 39.3	58 2
29	8 35 51.4	0.48	9.9996925	16 5.4	16 8.2	59 2.6	59 1
30	9 35 3.5	0.52	9.9998209	16 10.7	16 12.9	59 22.2	59 3
31	10 34 13.8	0.53	9.9999490	16 14.7	16 15.9	59 36.8	59 4
32	11 33 22.2	S. 0.50	0.0000768	16 16.6	16 16.7	59 43.9	59 4

MEAN TIME.

Day of the Week.	Day of the Month.	THE MOON'S					
		Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
Wed.	1	267 13 37.6	274 21 58.9	S. 4 9 15.1	S. 4 29 33.3	24.1	20 1.9
Thur.	2	281 35 8.4	288 52 42.9	4 45 48.5	4 57 36.8	25.1	21 5.7
Frid.	3	296 14 7.2	303 38 38.0	5 4 37.5	5 6 36.6	26.1	22 7.5
Sat.	4	311 5 22.8	318 33 20.7	5 3 26.2	4 55 6.0	27.1	23 5.6
Sun.	5	326 1 26.0	333 28 30.0	4 41 42.7	4 23 34.3	28.1	23 59.6
Mon.	6	340 53 24.8	348 15 5.4	4 1 2.7	3 34 37.7	29.1	♄
Tues.	7	355 32 33.2	2 44 57.7	3 4 54.2	2 32 31.4	0.6	0 50.2
Wed.	8	9 51 38.5	16 52 5.9	1 58 7.1	1 22 22.6	1.6	1 38.6
Thur.	9	23 46 0.8	30 33 15.4	S. 0 45 55.3	S. 0 9 21.5	2.6	2 25.9
Frid.	10	37 13 52.5	43 48 0.8	N. 0 26 47.2	N. 1 2 1.0	3.6	3 13.3
Sat.	11	50 15 59.5	56 38 11.9	1 35 55.5	2 8 8.1	4.6	4 1.7
Sun.	12	62 55 7.1	69 7 16.9	2 38 21.3	3 6 19.2	5.6	4 51.4
Mon.	13	75 15 17.2	81 19 43.2	3 31 49.5	3 54 40.6	6.6	5 42.4
Tues.	14	87 21 12.8	93 20 22.5	4 14 44.5	4 31 52.5	7.6	6 34.2
Wed.	15	99 17 49.5	105 14 8.6	4 45 58.5	4 56 57.6	8.6	7 25.8
Thur.	16	111 9 54.7	117 5 39.1	5 4 44.2	5 9 15.2	9.6	8 16.2
Frid.	17	123 1 52.3	128 59 1.2	5 10 27.4	5 8 19.2	10.6	9 4.6
Sat.	18	134 57 31.4	140 57 44.6	5 2 49.0	4 53 57.7	11.6	9 50.8
Sun.	19	147 0 0.6	153 4 35.2	4 41 46.9	4 26 21.0	12.6	10 35.0
Mon.	20	159 11 41.9	165 21 31.5	4 7 44.5	3 46 6.6	13.6	11 17.6
Tues.	21	171 34 12.3	177 49 49.5	3 21 37.1	2 54 29.0	14.6	11 59.5
Wed.	22	184 8 27.3	190 30 8.0	2 24 58.0	1 53 23.1	15.6	12 41.7
Thur.	23	196 54 53.3	203 22 43.5	1 20 4.5	N. 0 45 26.3	16.6	13 25.2
Frid.	24	209 53 38.6	216 27 39.3	N. 0 9 53.6	S. 0 26 5.2	17.6	14 11.1
Sat.	25	223 4 46.1	229 44 58.9	S. 1 2 1.8	1 37 25.9	18.6	15 0.6
Sun.	26	236 28 19.4	243 14 47.8	2 11 46.3	2 44 32.7	19.6	15 54.4
Mon.	27	250 4 25.7	256 57 10.7	3 15 14.2	3 43 21.1	20.6	16 52.5
Tues.	28	263 53 2.5	270 51 57.3	4 8 24.9	4 29 59.5	21.6	17 53.8
Wed.	29	277 53 48.6	284 58 26.8	4 47 39.9	5 1 5.9	22.6	18 56.1
Thur.	30	292 5 39.7	299 15 8.8	5 9 59.3	5 14 8.1	23.6	19 56.8
Frid.	31	306 26 32.5	313 39 23.6	5 13 22.8	5 7 41.0	24.6	20 54.4
Sat.	32	320 53 11.5	328 7 20.2	S. 4 57 5.8	S. 4 41 46.5	25.6	21 48.2

MEAN

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	
	Longitude.	Latitude.		
	Noon.	Noon.	Noon.	
	^o ['] ["]	["]		
1	340 44 40.3	S. 0.56	9.9963260	16
2	341 44 48.5	0.62	9.9964392	16
3	342 44 55.2	0.65	9.9965533	16
4	343 45 0.1	0.64	9.9966678	16
5	344 45 3.3	0.61	9.9967828	16
6	345 45 4.6	0.55	9.9968982	16
7	346 45 4.1	0.47	9.9970138	16
8	347 45 1.4	0.36	9.9971296	16
9	348 44 56.8	0.23	9.9972457	15
10	349 44 50.3	S. 0.10	9.9973621	15
11	350 44 41.5	N. 0.04	9.9974787	15
12	351 44 30.5	0.17	9.9975955	15
13	352 44 17.3	0.29	9.9977128	15
14	353 44 2.0	0.40	9.9978307	14
15	354 43 44.2	0.48	9.9979492	14
16	355 43 24.2	0.54	9.9980684	14
17	356 43 1.8	0.56	9.9981883	14
18	357 42 37.2	0.56	9.9983092	14
19	358 42 10.3	0.53	9.9984309	14
20	359 41 41.2	0.46	9.9985535	14
21	0 41 10.1	0.37	9.9986770	13
22	1 40 36.8	0.26	9.9988015	13
23	2 40 1.4	0.14	9.9989269	13
24	3 39 24.2	N. 0.02	9.9990532	13
25	4 38 45.2	S. 0.11	9.9991801	13
26	5 38 4.3	0.23	9.9993077	13
27	6 37 21.8	0.34	9.9994357	13
28	7 36 37.5	0.43	9.9995641	13
29	8 35 51.4	0.48	9.9996925	13
30	9 35 3.5	0.52	9.9998209	13
31	10 34 13.8	0.53	9.9999490	13
32	11 33 22.2	S. 0.50	0.0000768	13

N TIME.

ENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
TUESDAY 7.			
0	23 48 32.91	S. 4 36 3.2	168.03
1	23 50 41.92	4 19 15.0	168.10
2	23 52 50.71	4 2 26.4	168.18
3	23 54 59.30	3 45 37.3	168.20
4	23 57 7.68	3 28 48.1	168.23
5	23 59 15.87	3 11 58.7	168.25
6	0 1 23.86	2 55 9.2	168.23
7	0 3 31.67	2 38 19.8	168.22
8	0 5 39.29	2 21 30.5	168.17
9	0 7 46.73	2 4 41.5	168.12
10	0 9 54.00	1 47 52.8	168.03
11	0 12 1.10	1 31 4.6	167.95
12	0 14 8.03	1 14 16.9	167.85
13	0 16 14.81	0 57 29.8	167.72
14	0 18 21.43	0 40 43.5	167.57
15	0 20 27.90	0 23 58.1	167.43
16	0 22 34.22	S. 0 7 13.5	167.25
17	0 24 40.40	N. 0 9 30.0	167.07
18	0 26 46.45	0 26 12.4	166.85
19	0 28 52.37	0 42 53.5	166.65
20	0 30 58.16	0 59 33.4	166.40
21	0 33 3.83	1 16 11.8	166.15
22	0 35 9.38	1 32 48.7	165.90
23	0 37 14.82	N. 1 49 24.1	165.60

WEDNESDAY 8.

0	39 20.15	N. 2 5 57.7	165.30
1	41 25.38	2 22 29.5	165.00
2	43 30.51	2 38 59.5	164.68
3	45 35.56	2 55 27.6	164.33
4	47 40.51	3 11 53.6	163.98
5	49 45.38	3 28 17.5	163.62
6	51 50.16	3 44 39.2	163.22
7	54 54.87	4 0 58.5	162.85
8	57 59.52	4 17 15.6	162.42
9	0 0 0.00	4 33 30.1	162.02
10	0 0 0.00	4 49 42.2	161.57
11	0 0 0.00	5 5 51.6	161.12
12	0 0 0.00	5 21 58.3	160.72
13	0 0 0.00	5 38 2.3	160.32
14	0 0 0.00	5 54 3.7	159.92
15	0 0 0.00	6 10 3.7	159.52
16	0 0 0.00	6 26 3.7	159.12
17	0 0 0.00	6 42 3.7	158.72
18	0 0 0.00	6 58 3.7	158.32
19	0 0 0.00	7 14 3.7	157.92
20	0 0 0.00	7 30 3.7	157.52
21	0 0 0.00	7 46 3.7	157.12
22	0 0 0.00	8 02 3.7	156.72
23	0 0 0.00	8 18 3.7	156.32

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 1.				FRIDAY 3.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	17 47 31.04	S. 27 35 12.6	25.23	0	19 57 14.17	S. 25 54 25.9	69.20
1	17 50 10.70	27 37 44.0	23.33	1	19 59 54.78	25 47 30.7	71.08
2	17 52 50.62	27 40 4.0	21.45	2	20 2 35.17	25 40 24.2	72.95
3	17 55 30.80	27 42 12.7	19.53	3	20 5 15.31	25 33 6.5	74.80
4	17 58 11.22	27 44 9.9	17.62	4	20 7 55.22	25 25 37.7	76.65
5	18 0 51.87	27 45 55.6	15.70	5	20 10 34.87	25 17 57.8	78.47
6	18 3 32.75	27 47 29.8	13.78	6	20 13 14.26	25 10 7.0	80.28
7	18 6 13.85	27 48 52.5	11.82	7	20 15 53.39	25 2 5.3	82.08
8	18 8 55.15	27 50 3.4	9.88	8	20 18 32.24	24 53 52.8	83.88
9	18 11 36.64	27 51 2.7	7.93	9	20 21 10.81	24 45 29.5	85.67
10	18 14 18.32	27 51 50.3	5.97	10	20 23 49.10	24 36 55.5	87.42
11	18 17 0.18	27 52 26.1	4.00	11	20 26 27.09	24 28 11.0	89.17
12	18 19 42.21	27 52 50.1	2.02	12	20 29 4.78	24 19 16.0	90.90
13	18 22 24.39	27 53 2.2	0.05	13	20 31 42.16	24 10 10.6	92.63
14	18 25 6.71	27 53 2.5	1.95	14	20 34 19.23	24 0 54.8	94.33
15	18 27 49.17	27 52 50.8	3.93	15	20 36 55.99	23 51 28.8	96.02
16	18 30 31.75	27 52 27.2	5.92	16	20 39 32.41	23 41 52.7	97.68
17	18 33 14.44	27 51 51.7	7.93	17	20 42 8.51	23 32 6.6	99.33
18	18 35 57.23	27 51 4.1	9.92	18	20 44 44.28	23 22 10.6	100.98
19	18 38 40.11	27 50 4.6	11.93	19	20 47 19.70	23 12 4.7	102.62
20	18 41 23.08	27 48 53.0	13.92	20	20 49 54.79	23 1 49.0	104.20
21	18 44 6.11	27 47 29.5	15.95	21	20 52 29.52	22 51 23.8	105.80
22	18 46 49.19	27 45 53.8	17.95	22	20 55 3.90	22 40 49.0	107.37
23	18 49 32.33	S. 27 44 6.1	19.95	23	20 57 37.93	S. 22 30 4.8	108.93
THURSDAY 2.				SATURDAY 4.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	18 52 15.50	S. 27 42 6.4	21.97	0	21 0 11.59	S. 22 19 11.2	110.45
1	18 54 58.70	27 39 54.6	23.98	1	21 2 44.89	22 8 8.5	111.98
2	18 57 41.91	27 37 30.7	25.98	2	21 5 17.82	21 56 56.6	113.47
3	19 0 25.12	27 34 54.8	28.00	3	21 7 50.39	21 45 35.8	114.95
4	19 3 8.32	27 32 6.8	30.02	4	21 10 22.58	21 34 6.1	116.42
5	19 5 51.51	27 29 6.7	32.02	5	21 12 54.39	21 22 27.6	117.85
6	19 8 34.66	27 25 54.6	34.02	6	21 15 25.83	21 10 40.5	119.28
7	19 11 17.77	27 22 30.5	36.02	7	21 17 56.89	20 58 44.8	120.68
8	19 14 0.83	27 18 54.4	38.03	8	21 20 27.57	20 46 40.7	122.07
9	19 16 43.83	27 15 6.2	40.02	9	21 22 57.86	20 34 28.3	123.43
10	19 19 26.75	27 11 6.1	42.00	10	21 25 27.77	20 22 7.7	124.78
11	19 22 9.59	27 6 54.1	44.00	11	21 27 57.29	20 9 39.0	126.12
12	19 24 52.33	27 2 30.1	45.98	12	21 30 26.42	19 57 2.3	127.42
13	19 27 34.97	26 57 54.2	47.97	13	21 32 55.16	19 44 17.8	128.72
14	19 30 17.48	26 53 6.4	49.92	14	21 35 23.51	19 31 25.5	129.97
15	19 32 59.88	26 48 6.9	51.90	15	21 37 51.48	19 18 25.7	131.22
16	19 35 42.14	26 42 55.5	53.85	16	21 40 19.05	19 5 18.4	132.45
17	19 38 24.25	26 37 32.4	55.80	17	21 42 46.23	18 52 3.7	133.63
18	19 41 6.21	26 31 57.6	57.75	18	21 45 13.02	18 38 41.9	134.83
19	19 43 48.00	26 26 11.1	59.67	19	21 47 39.42	18 25 12.9	135.98
20	19 46 29.62	26 20 13.1	61.60	20	21 50 5.43	18 11 37.0	137.13
21	19 49 11.05	26 14 3.5	63.52	21	21 52 31.05	17 57 54.2	138.28
22	19 51 52.29	26 7 42.4	65.43	22	21 54 56.28	17 44 4.7	139.4
23	19 54 33.34	26 1 9.8	67.32	23	21 57 21.12	17 30 8.6	140.4
24	19 57 14.17	S. 25 54 25.9		24	21 59 45.57	S. 17 16 6.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SUNDAY 5.</i>				<i>TUESDAY 7.</i>			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	21 59 45.57	S. 17 16 6.0	141.48	0	23 48 32.91	S. 4 36 3.2	168.03
1	22 2 9.64	17 1 57.1	142.50	1	23 50 41.92	4 19 15.0	168.10
2	22 4 33.32	16 47 42.1	143.53	2	23 52 50.71	4 2 26.4	168.18
3	22 6 56.61	16 33 20.9	144.52	3	23 54 59.30	3 45 37.3	168.20
4	22 9 19.53	16 18 53.8	145.50	4	23 57 7.68	3 28 48.1	168.23
5	22 11 42.07	16 4 20.8	146.43	5	23 59 15.87	3 11 58.7	168.25
6	22 14 4.22	15 49 42.2	147.38	6	0 1 23.86	2 55 9.2	168.23
7	22 16 26.01	15 34 57.9	148.28	7	0 3 31.67	2 38 19.8	168.22
8	22 18 47.41	15 20 8.2	149.17	8	0 5 39.29	2 21 30.5	168.17
9	22 21 8.45	15 5 13.2	150.05	9	0 7 46.73	2 4 41.5	168.12
10	22 23 29.11	14 50 12.9	150.88	10	0 9 54.00	1 47 52.8	168.03
11	22 25 49.41	14 35 7.6	151.72	11	0 12 1.10	1 31 4.6	167.95
12	22 28 9.34	14 19 57.3	152.52	12	0 14 8.03	1 14 16.9	167.85
13	22 30 28.91	14 4 42.2	153.32	13	0 16 14.81	0 57 29.8	167.72
14	22 32 48.12	13 49 22.3	154.07	14	0 18 21.43	0 40 43.5	167.57
15	22 35 6.97	13 33 57.9	154.82	15	0 20 27.90	0 23 58.1	167.43
16	22 37 25.47	13 18 29.0	155.53	16	0 22 34.22	S. 0 7 13.5	167.25
17	22 39 43.62	13 2 55.8	156.23	17	0 24 40.40	N. 0 9 30.0	167.07
18	22 42 1.42	12 47 18.4	156.92	18	0 26 46.45	0 26 12.4	166.85
19	22 44 18.88	12 31 36.9	157.58	19	0 28 52.37	0 42 53.5	166.65
20	22 46 35.99	12 15 51.4	158.20	20	0 30 58.16	0 59 33.4	166.40
21	22 48 52.77	12 0 2.2	158.83	21	0 33 3.83	1 16 11.8	166.15
22	22 51 9.22	11 44 9.2	159.43	22	0 35 9.38	1 32 48.7	165.90
23	22 53 25.34	S. 11 28 12.6	160.02	23	0 37 14.82	N. 1 49 24.1	165.60
<i>MONDAY 6.</i>				<i>WEDNESDAY 8.</i>			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	22 55 41.13	S. 11 12 12.5	160.57	0	0 39 20.15	N. 2 5 57.7	165.30
1	22 57 56.60	10 56 9.1	161.10	1	0 41 25.38	2 22 29.5	165.00
2	23 0 11.74	10 40 2.5	161.60	2	0 43 30.51	2 38 59.5	164.68
3	23 2 26.58	10 23 52.9	162.12	3	0 45 35.56	2 55 27.6	164.33
4	23 4 41.10	10 7 40.2	162.58	4	0 47 40.51	3 11 53.6	163.98
5	23 6 55.32	9 51 24.7	163.05	5	0 49 45.38	3 28 17.5	163.62
6	23 9 9.23	9 35 6.4	163.47	6	0 51 50.16	3 44 39.2	163.22
7	23 11 22.85	9 18 45.6	163.90	7	0 53 54.87	4 0 58.5	162.85
8	23 13 36.17	9 2 22.2	164.28	8	0 55 59.52	4 17 15.6	162.42
9	23 15 49.20	8 45 56.5	164.68	9	0 58 4.09	4 33 30.1	162.02
10	23 18 1.95	8 29 28.4	165.02	10	1 0 8.60	4 49 42.2	161.57
11	23 20 14.41	8 12 58.3	165.37	11	1 2 13.06	5 5 51.6	161.12
12	23 22 26.60	7 56 26.1	165.68	12	1 4 17.46	5 21 58.3	160.67
13	23 24 38.51	7 39 52.0	165.98	13	1 6 21.81	5 38 2.3	160.18
14	23 26 50.16	7 23 16.1	166.27	14	1 8 26.12	5 54 3.4	159.68
15	23 29 1.54	7 6 38.5	166.53	15	1 10 30.39	6 10 1.5	159.20
16	23 31 12.67	6 49 59.3	166.77	16	1 12 34.62	6 25 56.7	158.68
17	23 33 23.54	6 33 18.7	166.98	17	1 14 38.83	6 41 48.8	158.15
18	23 35 34.16	6 16 36.8	167.20	18	1 16 43.00	6 57 37.7	157.60
19	23 37 44.54	5 59 53.6	167.38	19	1 18 47.15	7 13 23.3	157.07
20	23 39 54.67	5 43 9.3	167.55	20	1 20 51.28	7 29 5.7	156.48
21	23 42 4.57	5 26 24.0	167.70	21	1 22 55.40	7 44 44.6	155.92
22		5 9 7.8	167.83	22	1 24 59.50	8 0 20.1	155.33
23			167.93	23	1 27 3.60	8 15 52.1	154.72
24				24	1 29 7.70	N. 8 31 20.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 9.				SATURDAY 11.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	1 29 7.70	N. 8 31 20.4	154.10	0	3 9 27.98	N. 19 22 11.3	112.55
1	1 31 11.80	8 46 45.0	153.48	1	3 11 35.83	19 33 26.6	111.48
2	1 33 15.90	9 2 5.9	152.83	2	3 13 43.82	19 44 35.5	110.38
3	1 35 20.01	9 17 22.9	152.20	3	3 15 51.93	19 55 37.8	109.23
4	1 37 24.14	9 32 36.1	151.53	4	3 18 0.18	20 6 33.5	108.13
5	1 39 28.28	9 47 45.3	150.87	5	3 20 8.56	20 17 22.6	107.07
6	1 41 32.44	10 2 50.5	150.17	6	3 22 17.08	20 28 5.0	105.97
7	1 43 36.63	10 17 51.5	149.48	7	3 24 25.73	20 38 40.8	104.83
8	1 45 40.84	10 32 48.4	148.78	8	3 26 34.52	20 49 9.8	103.70
9	1 47 45.09	10 47 41.1	148.07	9	3 28 43.45	20 59 32.0	102.55
10	1 49 49.38	11 2 29.5	147.33	10	3 30 52.51	21 9 47.3	101.42
11	1 51 53.70	11 17 13.5	146.60	11	3 33 1.71	21 19 55.8	100.27
12	1 53 58.05	11 31 53.1	145.85	12	3 35 11.04	21 29 57.4	99.12
13	1 56 2.46	11 46 28.2	145.10	13	3 37 20.52	21 39 52.1	97.93
14	1 58 6.92	12 0 58.8	144.33	14	3 39 30.13	21 49 39.7	96.78
15	2 0 11.43	12 15 24.8	143.55	15	3 41 39.88	21 59 20.4	95.60
16	2 2 16.00	12 29 46.1	142.77	16	3 43 49.77	22 8 54.0	94.40
17	2 4 20.62	12 44 2.7	141.97	17	3 45 59.79	22 18 20.4	93.23
18	2 6 25.31	12 58 14.5	141.15	18	3 48 9.96	22 27 39.8	92.02
19	2 8 30.06	13 12 21.4	140.32	19	3 50 20.26	22 36 51.9	90.83
20	2 10 34.88	13 26 23.3	139.50	20	3 52 30.70	22 45 56.9	89.62
21	2 12 39.77	13 40 20.3	138.67	21	3 54 41.27	22 54 54.6	88.40
22	2 14 44.74	13 54 12.3	137.80	22	3 56 51.98	23 3 45.0	87.18
23	2 16 49.78	N. 14 7 59.1	136.95	23	3 59 2.83	N. 23 12 28.1	85.95
FRIDAY 10.				SUNDAY 12.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	2 18 54.90	N. 14 21 40.8	136.07	0	4 1 13.81	N. 23 21 3.8	84.72
1	2 21 0.10	14 35 17.2	135.20	1	4 3 24.92	23 29 32.1	83.48
2	2 23 5.39	14 48 48.4	134.30	2	4 5 36.17	23 37 53.0	82.25
3	2 25 10.76	15 2 14.2	133.40	3	4 7 47.54	23 46 6.5	81.00
4	2 27 16.22	15 15 34.6	132.50	4	4 9 59.05	23 54 12.5	79.73
5	2 29 21.78	15 28 49.6	131.58	5	4 12 10.69	24 2 10.9	78.50
6	2 31 27.43	15 41 59.1	130.67	6	4 14 22.45	24 10 1.9	77.22
7	2 33 33.18	15 55 3.1	129.72	7	4 16 34.35	24 17 45.2	75.95
8	2 35 39.04	16 8 1.4	128.78	8	4 18 46.36	24 25 20.9	74.68
9	2 37 44.99	16 20 54.1	127.83	9	4 20 58.50	24 32 49.0	73.42
10	2 39 51.05	16 33 41.1	126.87	10	4 23 10.77	24 40 9.5	72.12
11	2 41 57.21	16 46 22.3	125.90	11	4 25 23.15	24 47 22.2	70.85
12	2 44 3.48	16 58 57.7	124.93	12	4 27 35.65	24 54 27.3	69.55
13	2 46 9.87	17 11 27.3	123.93	13	4 29 48.27	25 1 24.6	68.27
14	2 48 16.37	17 23 50.9	122.95	14	4 32 1.01	25 8 14.2	66.95
15	2 50 22.99	17 36 8.6	121.95	15	4 34 13.87	25 14 55.9	65.67
16	2 52 29.72	17 48 20.3	120.93	16	4 36 26.83	25 21 29.9	64.33
17	2 54 36.57	18 0 25.9	119.92	17	4 38 39.91	25 27 55.9	63.05
18	2 56 43.54	18 12 25.4	118.88	18	4 40 53.09	25 34 14.2	61.72
19	2 58 50.64	18 24 18.7	117.87	19	4 43 6.38	25 40 24.5	60.40
20	3 0 57.85	18 36 5.9	116.80	20	4 45 19.77	25 46 26.9	59.08
21	3 3 5.20	18 47 46.7	115.77	21	4 47 33.26	25 52 21.4	57.75
22	3 5 12.66	18 59 21.3	114.70	22	4 49 46.85	25 58 7.9	56.42
23	3 7 20.26	19 10 49.5	113.63	23	4 52 0.53	26 3 46.4	55.10
24	3 9 27.98	N. 19 22 11.3		24	4 54 14.31	N. 26 9 17.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 13.				WEDNESDAY 15.			
0	4 54 14.31	N.26 9 17.0	53.75	0	6 41 58.85	N.27 53 26.1	11.80
1	4 56 28.18	26 14 39.5	52.42	1	6 44 12.89	27 52 15.3	13.13
2	4 58 42.13	26 19 54.0	51.07	2	6 46 26.84	27 50 56.5	14.50
3	5 0 56.17	26 25 0.4	49.72	3	6 48 40.69	27 49 29.5	15.82
4	5 3 10.28	26 29 58.7	48.38	4	6 50 54.44	27 47 54.6	17.17
5	5 5 24.48	26 34 49.0	47.02	5	6 53 8.09	27 46 11.6	18.50
6	5 7 38.75	26 39 31.1	45.68	6	6 55 21.63	27 44 20.6	19.82
7	5 9 53.09	26 44 5.2	44.32	7	6 57 35.06	27 42 21.7	21.15
8	5 12 7.50	26 48 31.1	42.97	8	6 59 48.37	27 40 14.8	22.48
9	5 14 21.97	26 52 48.9	41.60	9	7 2 1.57	27 37 59.9	23.80
10	5 16 36.51	26 56 58.5	40.23	10	7 4 14.65	27 35 37.1	25.12
11	5 18 51.11	27 0 59.9	38.88	11	7 6 27.60	27 33 6.4	26.43
12	5 21 5.75	27 4 53.2	37.52	12	7 8 40.42	27 30 27.8	27.75
13	5 23 20.45	27 8 38.3	36.15	13	7 10 53.12	27 27 41.3	29.05
14	5 25 35.21	27 12 15.2	34.78	14	7 13 5.68	27 24 47.0	30.35
15	5 27 50.01	27 15 43.9	33.42	15	7 15 18.10	27 21 44.9	31.65
16	5 30 4.84	27 19 4.4	32.05	16	7 17 30.38	27 18 35.0	32.93
17	5 32 19.72	27 22 16.7	30.67	17	7 19 42.52	27 15 17.4	34.23
18	5 34 34.63	27 25 20.7	29.30	18	7 21 54.51	27 11 52.0	35.52
19	5 36 49.58	27 28 16.5	27.93	19	7 24 6.35	27 8 18.9	36.78
20	5 39 4.55	27 31 4.1	26.55	20	7 26 18.04	27 4 38.2	38.08
21	5 41 19.54	27 33 43.4	25.17	21	7 28 29.56	27 0 49.7	39.33
22	5 43 34.55	27 36 14.4	23.80	22	7 30 40.93	26 56 53.7	40.60
23	5 45 49.58	N.27 38 37.2	22.42	23	7 32 52.14	N.26 52 50.1	41.87
TUESDAY 14.				THURSDAY 16.			
0	5 48 4.62	N.27 40 51.7	21.03	0	7 35 3.18	N.26 48 38.9	43.12
1	5 50 19.67	27 42 57.9	19.67	1	7 37 14.05	26 44 20.2	44.37
2	5 52 34.73	27 44 55.9	18.28	2	7 39 24.76	26 39 54.0	45.62
3	5 54 49.79	27 46 45.6	16.90	3	7 41 35.29	26 35 20.3	46.83
4	5 57 4.84	27 48 27.0	15.53	4	7 43 45.64	26 30 39.3	48.08
5	5 59 19.88	27 50 0.2	14.15	5	7 45 55.81	26 25 50.8	49.32
6	6 1 34.92	27 51 25.1	12.77	6	7 48 5.81	26 20 54.9	50.53
7	6 3 49.93	27 52 41.7	11.40	7	7 50 15.62	26 15 51.7	51.75
8	6 6 4.93	27 53 50.1	10.02	8	7 52 25.25	26 10 41.2	52.97
9	6 8 19.91	27 54 50.2	8.63	9	7 54 34.69	26 5 23.4	54.18
10	6 10 34.85	27 55 42.0	7.27	10	7 56 43.94	25 59 58.3	55.37
11	6 12 49.76	27 56 25.6	5.90	11	7 58 53.00	25 54 26.1	56.57
12	6 15 4.64	27 57 1.0	4.52	12	8 1 1.87	25 48 46.7	57.75
13	6 17 19.48	27 57 28.1	3.15	13	8 3 10.55	25 43 0.2	58.95
14	6 19 34.27	27 57 47.0	1.78	14	8 5 19.03	25 37 6.5	60.12
15	6 21 49.01	27 57 57.7	0.42	15	8 7 27.31	25 31 5.8	61.28
16	6 24 3.70	27 58 0.2	0.95	16	8 9 35.40	25 24 58.1	62.45
17	6 26 18.33	27 57 54.5	2.32	17	8 11 43.28	25 18 43.4	63.62
18	6 28 32.91	27 57 40.6	3.68	18	8 13 50.96	25 12 21.7	64.75
19	6 30 47.41	27 57 18.5	5.03	19	8 15 58.43	25 5 53.2	65.92
20	6 33 1.85	27 56 48.3	6.38	20	8 18 5.70	24 59 17.7	67.05
21	6 35 16.22	27 56 10.0	7.75	21	8 20 12.77	24 52 35.4	68.17
22	6 37 30.51	27 55 23.5	9.12	22	8 22 19.63	24 45 46.4	69.32
23	6 39 44.73	27 54 28.8	10.45	23	8 24 26.27	24 38 50.5	70.42
24	6 41 58.85	N.27 53 26.1		24	8 26 32.71	N.24 31 48.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 17.				SUNDAY 19.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	8 26 32.71	N. 24 31 48.0	71.53	0	10 3 34.78	N. 16 55 53.1	116.52
1	8 28 38.94	24 24 38.8	72.63	1	10 5 31.27	16 44 14.0	117.27
2	8 30 44.96	24 17 23.0	73.75	2	10 7 27.58	16 32 30.4	118.00
3	8 32 50.76	24 10 0.5	74.83	3	10 9 23.73	16 20 42.4	118.75
4	8 34 56.35	24 2 31.5	75.92	4	10 11 19.72	16 8 49.9	119.47
5	8 37 1.73	23 54 56.0	77.00	5	10 13 15.54	15 56 53.1	120.18
6	8 39 6.90	23 47 14.0	78.07	6	10 15 11.21	15 44 52.0	120.90
7	8 41 11.85	23 39 25.6	79.13	7	10 17 6.71	15 32 46.6	121.60
8	8 43 16.59	23 31 30.8	80.20	8	10 19 2.06	15 20 37.0	122.30
9	8 45 21.11	23 23 29.6	81.25	9	10 20 57.26	15 8 23.2	122.98
10	8 47 25.41	23 15 22.1	82.28	10	10 22 52.30	14 56 5.3	123.65
11	8 49 29.51	23 7 8.4	83.33	11	10 24 47.20	14 43 43.4	124.33
12	8 51 33.38	22 58 48.4	84.37	12	10 26 41.95	14 31 17.4	125.00
13	8 53 37.04	22 50 22.2	85.38	13	10 28 36.56	14 18 47.4	125.65
14	8 55 40.49	22 41 49.9	86.40	14	10 30 31.03	14 6 13.5	126.30
15	8 57 43.72	22 33 11.5	87.42	15	10 32 25.37	13 53 35.7	126.93
16	8 59 46.74	22 24 27.0	88.42	16	10 34 19.57	13 40 54.1	127.55
17	9 1 49.54	22 15 36.5	89.42	17	10 36 13.64	13 28 8.8	128.20
18	9 3 52.13	22 6 40.0	90.40	18	10 38 7.59	13 15 19.6	128.80
19	9 5 54.51	21 57 37.6	91.38	19	10 40 1.41	13 2 26.8	129.40
20	9 7 56.67	21 48 29.3	92.38	20	10 41 55.10	12 49 30.4	130.00
21	9 9 58.62	21 39 15.2	93.32	21	10 43 48.68	12 36 30.4	130.60
22	9 12 0.36	21 29 55.3	94.28	22	10 45 42.14	12 23 26.8	131.17
23	9 14 1.89	N. 21 20 29.6	95.22	23	10 47 35.49	N. 12 10 19.8	131.75
SATURDAY 18.				MONDAY 20.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	9 16 3.20	N. 21 10 58.3	96.17	0	10 49 28.72	N. 11 57 9.3	132.30
1	9 18 4.31	21 1 21.3	97.10	1	10 51 21.85	11 43 55.5	132.87
2	9 20 5.20	20 51 38.7	98.03	2	10 53 14.88	11 30 38.3	133.42
3	9 22 5.89	20 41 50.5	98.95	3	10 55 7.81	11 17 17.8	133.95
4	9 24 6.37	20 31 56.8	99.87	4	10 57 0.64	11 3 54.1	134.48
5	9 26 6.65	20 21 57.6	100.77	5	10 58 53.37	10 50 27.2	135.00
6	9 28 6.72	20 11 53.0	101.67	6	11 0 46.02	10 36 57.2	135.53
7	9 30 6.60	20 1 43.0	102.55	7	11 2 38.58	10 23 24.0	136.02
8	9 32 6.26	19 51 27.7	103.43	8	11 4 31.05	10 9 47.9	136.53
9	9 34 5.73	19 41 7.1	104.32	9	11 6 23.44	9 56 8.7	137.00
10	9 36 5.00	19 30 41.2	105.18	10	11 8 15.76	9 42 26.7	137.50
11	9 38 4.07	19 20 10.1	106.05	11	11 10 8.00	9 28 41.7	137.97
12	9 40 2.95	19 9 33.8	106.90	12	11 12 0.17	9 14 53.9	138.43
13	9 42 1.63	18 58 52.4	107.73	13	11 13 52.28	9 1 3.3	138.88
14	9 44 0.12	18 48 6.0	108.58	14	11 15 44.32	8 47 10.0	139.33
15	9 45 58.42	18 37 14.5	109.40	15	11 17 36.30	8 33 14.0	139.77
16	9 47 56.52	18 26 18.1	110.23	16	11 19 28.23	8 19 15.4	140.20
17	9 49 54.44	18 15 16.7	111.03	17	11 21 20.10	8 5 14.2	140.63
18	9 51 52.18	18 4 10.5	111.85	18	11 23 11.92	7 51 10.4	141.03
19	9 53 49.72	17 52 59.4	112.65	19	11 25 3.70	7 37 4.2	141.45
20	9 55 47.09	17 41 43.5	113.43	20	11 26 55.43	7 22 55.6	141.83
21	9 57 44.28	17 30 22.9	114.22	21	11 28 47.13	7 8 44.6	142.22
22	9 59 41.29	17 18 57.6	115.00	22	11 30 38.79	6 54 31.3	142.58
23	10 1 38.12	17 7 27.6	115.75	23	11 32 30.42	6 40 15.8	142.97
24	10 3 34.78	N. 16 55 53.1		24	11 34 22.02	N. 6 25 58.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 21.				THURSDAY 23.			
	<i>h m s</i>	<i>° ′ ″</i>	<i>″</i>		<i>h m s</i>	<i>° ′ ″</i>	<i>″</i>
0	11 34 22.02	N. 6 25 58.0	143.32	0	13 4 24.28	S. 5 25 10.0	149.28
1	11 36 13.60	6 11 38.1	143.67	1	13 6 19.47	5 40 5.7	149.17
2	11 38 5.15	5 57 16.1	144.02	2	13 8 14.85	5 55 0.7	149.02
3	11 39 56.69	5 42 52.0	144.33	3	13 10 10.41	6 9 54.8	148.87
4	11 41 48.22	5 28 26.0	144.67	4	13 12 6.15	6 24 48.0	148.70
5	11 43 39.74	5 13 58.0	144.98	5	13 14 2.09	6 39 40.2	148.52
6	11 45 31.26	4 59 28.1	145.28	6	13 15 58.23	6 54 31.3	148.33
7	11 47 22.77	4 44 56.4	145.58	7	13 17 54.57	7 9 21.3	148.13
8	11 49 14.28	4 30 22.9	145.85	8	13 19 51.11	7 24 10.1	147.92
9	11 51 5.81	4 15 47.8	146.15	9	13 21 47.87	7 38 57.6	147.70
10	11 52 57.34	4 1 10.9	146.42	10	13 23 44.84	7 53 43.8	147.47
11	11 54 48.89	3 46 32.4	146.67	11	13 25 42.03	8 8 28.6	147.22
12	11 56 40.46	3 31 52.4	146.92	12	13 27 39.45	8 23 11.9	146.97
13	11 58 32.05	3 17 10.9	147.17	13	13 29 37.09	8 37 53.7	146.68
14	12 0 23.67	3 2 27.9	147.38	14	13 31 34.97	8 52 33.8	146.40
15	12 2 15.32	2 47 43.6	147.62	15	13 33 33.08	9 7 12.2	146.10
16	12 4 7.00	2 32 57.9	147.83	16	13 35 31.43	9 21 48.8	145.80
17	12 5 58.73	2 18 10.9	148.02	17	13 37 30.03	9 36 23.6	145.48
18	12 7 50.49	2 3 22.8	148.23	18	13 39 28.88	9 50 56.5	145.15
19	12 9 42.31	1 48 33.4	148.40	19	13 41 27.98	10 5 27.4	144.78
20	12 11 34.17	1 33 43.0	148.57	20	13 43 27.34	10 19 56.1	144.45
21	12 13 26.09	1 18 51.6	148.73	21	13 45 26.97	10 34 22.8	144.05
22	12 15 18.07	1 3 59.2	148.90	22	13 47 26.86	10 48 47.1	143.68
23	12 17 10.12	N. 0 49 5.8	149.03	23	13 49 27.02	S. 11 3 9.2	143.28
WEDNESDAY 22.				FRIDAY 24.			
	<i>h m s</i>	<i>° ′ ″</i>	<i>″</i>		<i>h m s</i>	<i>° ′ ″</i>	<i>″</i>
0	12 19 2.22	N. 0 34 11.6	149.17	0	13 51 27.45	S. 11 17 28.9	142.87
1	12 20 54.40	0 19 16.6	149.28	1	13 53 28.17	11 31 46.1	142.45
2	12 22 46.66	N. 0 4 20.9	149.42	2	13 55 29.17	11 46 0.8	142.00
3	12 24 39.00	S. 0 10 35.6	149.50	3	13 57 30.46	12 0 12.8	141.55
4	12 26 31.43	0 25 32.6	149.60	4	13 59 32.05	12 14 22.1	141.10
5	12 28 23.94	0 40 30.2	149.68	5	14 1 33.93	12 28 28.7	140.60
6	12 30 16.55	0 55 28.3	149.77	6	14 3 36.11	12 42 32.3	140.13
7	12 32 9.25	1 10 26.9	149.82	7	14 5 38.59	12 56 33.1	139.62
8	12 34 2.06	1 25 25.8	149.88	8	14 7 41.38	13 10 30.8	139.10
9	12 35 54.97	1 40 25.1	149.92	9	14 9 44.49	13 24 25.4	138.57
10	12 37 47.99	1 55 24.6	149.95	10	14 11 47.91	13 38 16.8	138.02
11	12 39 41.12	2 10 24.3	149.98	11	14 13 51.65	13 52 4.9	137.47
12	12 41 34.38	2 25 24.2	150.00	12	14 15 55.72	14 5 49.7	136.90
13	12 43 27.76	2 40 24.2	149.98	13	14 18 0.12	14 19 31.1	136.30
14	12 45 21.27	2 55 24.1	149.98	14	14 20 4.84	14 33 8.9	135.70
15	12 47 14.90	3 10 24.0	149.97	15	14 22 9.91	14 46 43.1	135.10
16	12 49 8.67	3 25 23.8	149.93	16	14 24 15.31	15 0 13.7	134.45
17	12 51 2.59	3 40 23.4	149.90	17	14 26 21.06	15 13 40.4	133.82
18	12 52 56.65	3 55 22.8	149.83	18	14 28 27.15	15 27 3.3	133.17
19	12 54 50.85	4 10 21.8	149.78	19	14 30 33.59	15 40 22.3	132.48
20	12 56 45.21	4 25 20.5	149.70	20	14 32 40.39	15 53 37.2	131.80
21	12 58 39.73	4 40 18.7	149.62	21	14 34 47.54	16 6 48.0	131.08
22	13 0 34.41	4 55 16.4	149.52	22	14 36 55.06	16 19 54.5	130.38
23	13 2 29.26	5 10 13.5	149.42	23	14 39 2.93	16 32 56.8	129.65
24	13 4 24.28	S. 5 25 10.0		24	14 41 11.18	S. 16 45 54.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 25.				MONDAY 27.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	14 41 11.18	S. 16 45 54.7	128.90	0	16 31 38.58	S. 25 12 0.5	74.85
1	14 43 19.79	16 58 48.1	128.13	1	16 34 6.67	25 19 29.6	73.35
2	14 45 28.78	17 11 36.9	127.37	2	16 36 35.15	25 26 49.7	71.83
3	14 47 38.14	17 24 21.1	126.57	3	16 39 4.00	25 34 0.7	70.28
4	14 49 47.88	17 37 0.5	125.77	4	16 41 33.24	25 41 2.4	68.75
5	14 51 58.00	17 49 35.1	124.95	5	16 44 2.84	25 47 54.9	67.20
6	14 54 8.51	18 2 4.8	124.10	6	16 46 32.81	25 54 38.1	65.60
7	14 56 19.40	18 14 29.4	123.25	7	16 49 3.14	26 1 11.7	64.03
8	14 58 30.69	18 26 48.9	122.38	8	16 51 33.83	26 7 35.9	62.43
9	15 0 42.36	18 39 3.2	121.50	9	16 54 4.88	26 13 50.5	60.80
10	15 2 54.44	18 51 12.2	120.62	10	16 56 36.28	26 19 55.3	59.18
11	15 5 6.91	19 3 15.9	119.68	11	16 59 8.02	26 25 50.4	57.55
12	15 7 19.78	19 15 14.0	118.77	12	17 1 40.11	26 31 35.7	55.88
13	15 9 33.06	19 27 6.6	117.82	13	17 4 12.53	26 37 11.0	54.23
14	15 11 46.74	19 38 53.5	116.85	14	17 6 45.27	26 42 36.4	52.55
15	15 14 0.82	19 50 34.6	115.87	15	17 9 18.34	26 47 51.7	50.85
16	15 16 15.32	20 2 9.8	114.90	16	17 11 51.72	26 52 56.8	49.17
17	15 18 30.22	20 13 39.2	113.87	17	17 14 25.41	26 57 51.8	47.45
18	15 20 45.54	20 25 2.4	112.85	18	17 16 59.40	27 2 36.5	45.72
19	15 23 1.26	20 36 19.5	111.82	19	17 19 33.69	27 7 10.8	43.98
20	15 25 17.40	20 47 30.4	110.77	20	17 22 8.26	27 11 34.7	42.25
21	15 27 33.96	20 58 35.0	109.68	21	17 24 43.12	27 15 48.2	40.48
22	15 29 50.93	21 9 33.1	108.62	22	17 27 18.25	27 19 51.1	38.72
23	15 32 8.32	S. 21 20 24.8	107.50	23	17 29 53.65	S. 27 23 43.4	36.95
SUNDAY 26.				TUESDAY 28.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	15 34 26.12	S. 21 31 9.8	106.38	0	17 32 29.31	S. 27 27 25.1	35.17
1	15 36 44.35	21 41 48.1	105.25	1	17 35 5.23	27 30 56.1	33.37
2	15 39 2.99	21 52 19.6	104.12	2	17 37 41.39	27 34 16.3	31.55
3	15 41 22.06	22 2 44.3	102.93	3	17 40 17.78	27 37 25.6	29.75
4	15 43 41.54	22 13 1.9	101.75	4	17 42 54.40	27 40 24.1	27.93
5	15 46 1.45	22 23 12.4	100.57	5	17 45 31.25	27 43 11.7	26.10
6	15 48 21.78	22 33 15.8	99.33	6	17 48 8.30	27 45 48.3	24.25
7	15 50 42.52	22 43 11.8	98.12	7	17 50 45.55	27 48 13.8	22.42
8	15 53 3.69	22 53 0.5	96.88	8	17 53 23.00	27 50 28.3	20.57
9	15 55 25.27	23 2 41.8	95.60	9	17 56 0.64	27 52 31.7	18.70
10	15 57 47.28	23 12 15.4	94.33	10	17 58 38.44	27 54 23.9	16.85
11	16 0 9.70	23 21 41.4	93.05	11	18 1 16.42	27 56 5.0	14.97
12	16 2 32.54	23 30 59.7	91.73	12	18 3 54.56	27 57 34.8	13.08
13	16 4 55.80	23 40 10.1	90.42	13	18 6 32.85	27 58 53.3	11.20
14	16 7 19.47	23 49 12.6	89.08	14	18 9 11.27	28 0 0.5	9.32
15	16 9 43.56	23 58 7.1	87.72	15	18 11 49.83	28 0 56.4	7.42
16	16 12 8.05	24 6 53.4	86.35	16	18 14 28.50	28 1 40.9	5.53
17	16 14 32.96	24 15 31.5	84.97	17	18 17 7.29	28 2 14.1	3.62
18	16 16 58.28	24 24 1.3	83.57	18	18 19 46.18	28 2 35.8	1.72
19	16 19 24.00	24 32 22.7	82.15	19	18 22 25.16	28 2 46.1	0.18
20	16 21 50.12	24 40 35.6	80.72	20	18 25 4.22	28 2 45.0	2.10
21	16 24 16.64	24 48 39.9	79.28	21	18 27 43.36	28 2 32.4	4.00
22	16 26 43.56	24 56 35.6	77.82	22	18 30 22.56	28 2 8.4	5.93
23	16 29 10.87	25 4 22.5	76.33	23	18 33 1.81	28 1 32.8	7.83
24	16 31 38.58	S. 25 12 0.5		24	18 35 41.11	S. 28 0 45.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 29.				FRIDAY 31.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	18 35 41.11	S. 28 0 45.8	9.75	0	20 41 1.27	S. 23 43 58.1	96.03
1	18 38 20.44	27 59 47.3	11.68	1	20 43 32.21	23 34 21.9	97.60
2	18 40 59.80	27 58 37.2	13.58	2	20 46 2.82	23 24 36.3	99.10
3	18 43 39.17	27 57 15.7	15.52	3	20 48 33.10	23 14 41.7	100.63
4	18 46 18.54	27 55 42.6	17.43	4	20 51 3.04	23 4 37.9	102.12
5	18 48 57.91	27 53 58.0	19.35	5	20 53 32.65	22 54 25.2	103.62
6	18 51 37.26	27 52 1.9	21.27	6	20 56 1.93	22 44 3.5	105.08
7	18 54 16.59	27 49 54.3	23.17	7	20 58 30.86	22 33 33.0	106.53
8	18 56 55.88	27 47 35.3	25.10	8	21 0 59.45	22 22 53.8	107.97
9	18 59 35.13	27 45 4.7	27.02	9	21 3 27.69	22 12 6.0	109.38
10	19 2 14.33	27 42 22.6	28.92	10	21 5 55.59	22 1 9.7	110.80
11	19 4 53.47	27 39 29.1	30.82	11	21 8 23.14	21 50 4.9	112.18
12	19 7 32.54	27 36 24.2	32.73	12	21 10 50.34	21 38 51.8	113.55
13	19 10 11.53	27 33 7.8	34.63	13	21 13 17.19	21 27 30.5	114.92
14	19 12 50.42	27 29 40.0	36.53	14	21 15 43.69	21 16 1.0	116.25
15	19 15 29.22	27 26 0.8	38.42	15	21 18 9.83	21 4 23.5	117.58
16	19 18 7.91	27 22 10.3	40.30	16	21 20 35.62	20 52 38.0	118.88
17	19 20 46.48	27 18 8.5	42.18	17	21 23 1.05	20 40 44.7	120.17
18	19 23 24.92	27 13 55.4	44.05	18	21 25 26.13	20 28 43.7	121.45
19	19 26 3.23	27 9 31.1	45.93	19	21 27 50.85	20 16 35.0	122.70
20	19 28 41.39	27 4 55.5	47.78	20	21 30 15.22	20 4 18.8	123.93
21	19 31 19.40	27 0 8.8	49.65	21	21 32 39.23	19 51 55.2	125.17
22	19 33 57.26	26 55 10.9	51.48	22	21 35 2.89	19 39 24.2	126.37
23	19 36 34.94	S. 26 50 2.0	53.33	23	21 37 26.19	S. 19 26 46.0	127.55
THURSDAY 30.				SATURDAY, APRIL 1.			
0	19 39 12.45	S. 26 44 42.0	55.17	0	21 39 49.14	S. 19 14 0.7	128.72
1	19 41 49.77	26 39 11.0	56.98				
2	19 44 26.90	26 33 29.1	58.80				
3	19 47 3.82	26 27 36.3	60.60				
4	19 49 40.54	26 21 32.7	62.40				
5	19 52 17.04	26 15 18.3	64.20				
6	19 54 53.32	26 8 53.1	65.97				
7	19 57 29.38	26 2 17.3	67.75				
8	20 0 5.19	25 55 30.8	69.50				
9	20 2 40.76	25 48 33.8	71.25				
10	20 5 16.09	25 41 26.3	73.00				
11	20 7 51.16	25 34 8.3	74.72				
12	20 10 25.96	25 26 40.0	76.43				
13	20 13 0.50	25 19 1.4	78.15				
14	20 15 34.76	25 11 12.5	79.83				
15	20 18 8.75	25 3 13.5	81.52				
16	20 20 42.45	24 55 4.4	83.18				
17	20 23 15.86	24 46 45.3	84.83				
18	20 25 48.98	24 38 16.3	86.48				
19	20 28 21.80	24 29 37.4	88.10				
20	20 30 54.32	24 20 48.8	89.73				
21	20 33 26.53	24 11 50.4	91.32				
22	20 35 58.43	24 2 42.5	92.92				
23	20 38 30.01	23 53 25.0	94.48				
24	20 41 1.27	S. 23 43 58.1					

PHASES OF THE MOON.

- New Moon - - 6 8 29.4
 ☾ First Quarter - 13 16 7.8
 ○ Full Moon - - 21 18 55.7
 ☾ Last Quarter - 29 1 16.9

- ☾ Perigee - - - - - 4 12
 ☾ Apogee - - - - - 16 9

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	P. L. of diff.
1	Spica μ W.	65 34 43	2287	67 21 1	2276	69 7 36	2264	70 54 28	2252
	Saturn W.	40 36 47	2298	42 22 49	2285	44 9 10	2272	45 55 51	2260
	Antares W.	19 41 13	2295	21 27 20	2281	23 13 47	2268	25 0 34	2255
	Venus E.	53 37 21	2693	52 0 32	2681	50 23 26	2669	48 46 4	2657
	SUN E.	73 33 43	2610	71 55 2	2597	70 16 3	2585	68 36 48	2573
2	Spica μ W.	79 53 2	2198	81 41 33	2188	83 30 19	2178	85 19 19	2168
	Saturn W.	54 53 42	2202	56 42 7	2191	58 30 48	2181	60 19 45	2171
	Antares W.	33 59 1	2197	35 47 33	2186	37 36 21	2176	39 25 24	2167
	Venus E.	40 35 25	2603	38 56 34	2593	37 17 30	2585	35 38 14	2577
	SUN E.	60 16 29	2516	58 35 38	2507	56 54 34	2496	55 13 15	2487
3	Saturn W.	69 27 56	2128	71 18 12	2121	73 8 39	2115	74 59 16	2108
	Antares W.	48 34 5	2124	50 24 27	2118	52 14 59	2111	54 5 41	2105
	Venus E.	27 19 30	2549	25 39 25	2547	23 59 17	2547	22 19 9	2530
	SUN E.	46 43 34	2448	45 1 7	2441	43 18 30	2434	41 35 43	2428
4	Saturn W.	84 14 29	2085	86 5 51	2083	87 57 17	2081	89 48 46	2079
	Antares W.	63 21 18	2083	65 12 44	2079	67 4 15	2077	68 55 49	2073
	SUN E.	33 0 24	2417	31 17 13	2416	29 34 1	2418	27 50 52	2421
8	SUN W.	- - -	- - -	- - -	- - -	25 25 47	2698	27 2 30	2711
	Aldebaran E.	57 36 49	2366	55 52 26	2385	54 8 29	2404	52 25 0	2424
	Mars E.	118 19 50	2261	116 32 53	2276	114 46 19	2293	113 0 9	2309
	Jupiter E.	119 19 38	2289	117 33 22	2304	115 47 29	2319	114 1 58	2335
9	SUN W.	35 1 30	2785	36 36 17	2802	38 10 42	2820	39 44 44	2838
	Aldebaran E.	43 54 56	2534	42 14 30	2558	40 34 37	2583	38 55 19	2611
	Mars E.	104 15 29	2396	102 31 49	2414	100 48 34	2432	99 5 45	2450
	Jupiter E.	105 20 15	2419	103 37 7	2436	101 54 24	2454	100 12 6	2471
10	SUN W.	47 29 8	2928	49 0 51	2947	50 32 10	2966	52 3 6	2983
	Pollux E.	73 47 51	2575	72 8 21	2593	70 29 17	2611	68 50 37	2628
	Mars E.	90 38 2	2541	88 57 46	2560	87 17 56	2578	85 38 31	2596
	Jupiter E.	91 46 46	2561	90 6 57	2578	88 27 32	2596	86 48 32	2614
11	SUN W.	59 32 5	3074	61 0 46	3092	62 29 6	3110	63 57 4	3127
	Pollux E.	60 43 10	2715	59 6 50	2731	57 30 52	2748	55 55 16	2765
	Mars E.	77 27 29	2684	75 50 28	2701	74 13 50	2718	72 37 34	2735
	Jupiter E.	78 39 27	2701	77 2 48	2717	75 26 31	2734	73 50 36	2750
12	SUN W.	71 11 51	3209	72 37 50	3223	74 3 32	3238	75 28 56	3253
	α Arietis W.	28 18 50	3114	29 46 43	3103	31 14 49	3095	32 43 5	3091
	Pollux E.	48 2 28	2841	46 28 54	2855	44 55 38	2870	43 22 41	2884
	Mars E.	64 41 39	2814	63 7 29	2829	61 33 39	2843	60 0 7	2857
	Jupiter E.	65 56 18	2828	64 22 27	2843	62 48 55	2857	61 15 41	2872
13	SUN W.	82 31 51	3319	83 55 41	3331	85 19 17	3343	86 42 39	3353
	α Arietis W.	40 5 9	3090	41 33 31	3092	43 1 51	3095	44 30 7	3098
	Pollux E.	35 42 6	2946	34 10 46	2958	32 39 41	2970	31 8 50	2981
	Mars E.	52 16 49	2922	50 44 58	2934	49 13 22	2946	47 42 1	2956
	Jupiter E.	53 33 55	2936	52 2 22	2949	50 31 5	2960	49 0 2	2971
	Regulus E.	72 19 11	2954	70 48 1	2966	69 17 5	2977	67 46 24	2988
14	SUN W.	93 36 36	3401	94 58 52	3409	96 20 58	3416	97 42 56	3422

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
		° ' "		° ' "		° ' "		° ' "	
1	Spica η W.	72 41 38	2241	74 29 5	2230	76 16 48	2219	78 4 47	2208
	Saturn W.	47 42 50	2247	49 30 7	2235	51 17 42	2224	53 5 34	2213
	Antares W.	26 47 40	2243	28 35 4	2231	30 22 46	2219	32 10 45	2208
	Venus E.	47 8 26	2646	45 30 33	2635	43 52 25	2624	42 14 2	2613
	SUN E.	66 57 16	2561	65 17 28	2550	63 37 24	2538	61 57 4	2527
2	Spica η W.	87 8 34	2159	88 58 3	2151	90 47 44	2143	92 37 38	2135
	Saturn W.	62 8 56	2162	63 58 21	2153	65 47 59	2144	67 37 51	2136
	Antares W.	41 14 41	2157	43 4 13	2149	44 53 58	2141	46 43 55	2132
	Venus E.	33 58 48	2569	32 19 11	2562	30 39 24	2557	28 59 30	2553
	SUN E.	53 31 43	2477	51 49 58	2469	50 8 1	2461	48 25 53	2453
3	Saturn W.	76 50 3	2102	78 40 59	2097	80 32 3	2093	82 23 13	2089
	Antares W.	55 56 33	2099	57 47 34	2094	59 38 42	2090	61 29 57	2086
	Venus E.	20 39 5	2555	18 59 8	2563	17 19 22	2577	15 39 56	2601
	SUN E.	39 52 48	2424	38 9 48	2421	36 26 44	2418	34 43 35	2417
4	Saturn W.	91 40 18	2078	93 31 51	2077	95 23 25	2077	97 14 59	2077
	Antares W.	70 47 26	2075	72 39 4	2074	74 30 43	2075	76 22 21	2076
	SUN E.	26 7 47	2425	24 24 48	2432	- - -	- - -	- - -	- - -
8	SUN W.	28 38 55	2723	30 15 4	2738	31 50 53	2753	33 26 22	2769
	Aldebaran E.	50 41 59	2445	48 59 28	2465	47 17 26	2487	45 35 55	2510
	Mars E.	111 14 23	2326	109 29 2	2344	107 44 6	2361	105 59 35	2378
	Jupiter E.	112 16 50	2352	110 32 6	2368	108 47 45	2385	107 3 48	2401
9	SUN W.	41 18 23	2856	42 51 39	2873	44 24 32	2891	45 57 2	2910
	Aldebaran E.	37 16 39	2639	35 38 37	2667	34 1 13	2697	32 24 29	2729
	Mars E.	97 23 21	2468	95 41 23	2486	93 59 50	2504	92 18 43	2523
	Jupiter E.	98 30 12	2489	96 48 44	2507	95 7 40	2525	93 27 1	2542
10	SUN W.	53 33 40	3002	55 3 50	3021	56 33 37	3039	58 3 2	3056
	Pollux E.	67 12 20	2646	65 34 28	2663	63 56 59	2681	62 19 53	2698
	Mars E.	83 59 30	2614	82 20 54	2632	80 42 42	2649	79 4 54	2666
	Jupiter E.	85 9 56	2631	83 31 43	2649	81 53 54	2666	80 16 29	2684
11	SUN W.	65 24 41	3143	66 51 58	3160	68 18 55	3177	69 45 32	3192
	Pollux E.	54 20 2	2780	52 45 8	2796	51 10 35	2811	49 36 22	2826
	Mars E.	71 1 41	2751	69 26 9	2768	67 50 59	2783	66 16 9	2798
	Jupiter E.	72 15 3	2766	70 39 51	2782	69 5 0	2798	67 30 29	2813
12	SUN W.	76 54 3	3266	78 18 54	3281	79 43 28	3294	81 7 47	3307
	α Arietis W.	34 11 26	3089	35 39 49	3087	37 8 15	3085	38 36 43	3087
	Pollux E.	41 50 1	2897	40 17 38	2910	38 45 32	2922	37 13 41	2935
	Mars E.	58 26 53	2871	56 53 57	2884	55 21 18	2897	53 48 55	2910
	Jupiter E.	59 42 46	2886	58 10 9	2898	56 37 48	2911	55 5 43	2924
13	SUN W.	88 5 49	3363	89 28 48	3373	90 51 35	3383	92 14 11	3393
	α Arietis W.	45 58 19	3102	47 26 26	3105	48 54 29	3109	50 22 28	3113
	Pollux E.	29 38 13	2990	28 7 48	3001	26 37 36	3010	25 7 36	3021
	Mars E.	46 10 53	2966	44 39 58	2977	43 9 16	2986	41 38 46	2995
	Jupiter E.	47 29 13	2982	45 58 38	2993	44 28 16	3003	42 58 7	3013
	Regulus E.	66 15 56	2998	64 45 40	3007	63 15 36	3017	61 45 44	3025
14	SUN W.	99 4 46	3430	100 26 29	3436	101 48 5	3441	103 9 35	3446

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	P. L. of diff.	
		° ' "		° ' "		° ' "		° ' "		
14	α Arietis W.	51 50 22	3117	53 18 11	3119	54 45 57	3123	56 13 39	3127	
	Aldebaran W.	22 4 34	3355	23 27 42	3325	24 51 25	3299	26 15 38	3275	
	Mars E.	40 8 27	3004	38 38 19	3012	37 8 21	3019	35 38 32	3027	
	Jupiter E.	41 28 10	3022	39 58 25	3032	38 28 52	3041	36 59 30	3049	
	Regulus E.	60 16 2	3034	58 46 31	3041	57 17 9	3048	55 47 55	3054	
15	Sun W.	104 31 0	3450	105 52 20	3455	107 13 35	3458	108 34 46	3461	
	α Arietis W.	63 31 9	3140	64 58 30	3142	66 25 49	3143	67 53 6	3144	
	Aldebaran W.	33 21 25	3218	34 47 13	3211	36 13 9	3204	37 39 13	3198	
	Mars E.	28 11 39	3058	26 42 38	3064	25 13 44	3068	23 44 55	3073	
	Jupiter E.	29 35 17	3092	28 6 58	3101	26 38 50	3110	25 10 53	3121	
	Regulus E.	48 23 56	3085	46 55 28	3090	45 27 6	3095	43 58 50	3098	
16	Sun W.	115 20 5	3468	116 41 5	3468	118 2 5	3467	119 23 6	3466	
	Aldebaran W.	44 51 13	3173	46 17 54	3169	47 44 40	3164	49 11 32	3159	
	Regulus E.	36 38 31	3114	35 10 38	3117	33 42 49	3119	32 15 3	3121	
	Saturn E.	115 16 18	3078	113 47 42	3078	112 19 6	3078	110 50 29	3077	
17	Aldebaran W.	56 27 17	3135	57 54 44	3130	59 22 17	3124	60 49 58	3118	
	Spica ♀ E.	78 47 0	3073	77 18 18	3070	75 49 32	3067	74 20 42	3064	
	Saturn E.	103 26 54	3065	101 58 2	3061	100 29 5	3058	99 0 4	3054	
18	Aldebaran W.	68 10 10	3087	69 38 36	3079	71 7 11	3073	72 35 54	3065	
	Pollux W.	23 55 3	3042	25 24 24	3035	26 53 54	3027	28 23 33	3020	
	Spica ♀ E.	66 55 14	3038	65 25 49	3033	63 56 17	3027	62 26 38	3021	
	Saturn E.	91 33 34	3028	90 3 56	3022	88 34 11	3016	87 4 18	3010	
19	Aldebaran W.	80 1 50	3026	81 31 30	3018	83 1 20	3010	84 31 21	3001	
	Pollux W.	35 54 4	2982	37 24 39	2973	38 55 25	2965	40 26 21	2957	
	Mars W.	19 29 36	2997	20 59 53	2987	22 30 22	2979	24 1 1	2970	
	Jupiter W.	18 53 41	3067	20 22 31	3044	21 51 49	3026	23 21 30	3008	
	Spica ♀ E.	54 56 20	2986	53 25 50	2978	51 55 10	2971	50 24 21	2964	
	Saturn E.	79 32 48	2973	78 2 2	2966	76 31 7	2958	75 0 2	2950	
20	Pollux W.	48 3 44	2913	49 35 46	2903	51 8 1	2894	52 40 27	2885	
	Mars W.	31 37 7	2925	33 8 54	2916	34 40 53	2907	36 13 3	2898	
	Jupiter W.	30 54 52	2937	32 26 24	2925	33 58 11	2913	35 30 14	2901	
	Spica ♀ E.	42 47 47	2923	41 15 57	2915	39 43 57	2906	38 11 46	2898	
	Saturn E.	67 21 59	2907	65 49 49	2899	64 17 29	2890	62 44 58	2881	
	Antares E.	88 37 52	2912	87 5 48	2902	85 33 32	2894	84 1 5	2884	
21	Pollux W.	60 25 39	2838	61 59 18	2828	63 33 10	2818	65 7 14	2808	
	Mars W.	43 56 49	2852	45 30 10	2843	47 3 42	2833	48 37 27	2824	
	Jupiter W.	43 14 8	2845	44 47 37	2835	46 21 20	2824	47 55 17	2814	
	Regulus W.	24 9 36	2904	25 41 50	2885	27 14 28	2869	28 47 26	2853	
	Spica ♀ E.	30 28 18	2859	28 55 6	2852	27 21 46	2845	25 48 17	2839	
	Saturn E.	54 59 26	2836	53 25 45	2828	51 51 54	2818	50 17 49	2809	
	Antares E.	76 15 48	2837	74 42 8	2828	73 8 16	2818	71 34 11	2808	
22	Mars W.	56 29 8	2778	58 4 4	2769	59 39 13	2760	61 14 34	2751	
	Jupiter W.	55 48 23	2763	57 23 40	2753	58 59 10	2743	60 34 53	2733	
	Regulus W.	36 36 39	2791	38 11 18	2779	39 46 13	2768	41 21 23	2757	
	Saturn E.	42 24 37	2767	40 49 26	2759	39 14 4	2751	37 38 32	2743	
	Antares E.	63 40 42	2761	62 5 23	2751	60 29 51	2742	58 54 7	2732	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		^o ⁱ ^u		^o ⁱ ^u		^o ⁱ ^u		^o ⁱ ^u	
14	α Arietis W.	57 41 16	3130	59 8 49	3132	60 36 18	3135	62 3 45	3138
	Aldebaran W.	27 40 14	3262	29 5 10	3248	30 30 22	3237	31 55 47	3226
	Mars E.	34 8 53	3025	32 39 23	3041	31 10 1	3047	29 40 46	3053
	Jupiter E.	35 30 18	3058	34 1 17	3067	32 32 27	3075	31 3 47	3083
	Regulus E.	54 18 51	3064	52 49 57	3070	51 21 11	3075	49 52 31	3079
15	SUN W.	109 55 54	3463	111 17 0	3465	112 38 3	3466	113 59 5	3468
	α Arietis W.	69 20 22	3145	70 47 37	3146	72 14 51	3146	73 42 5	3146
	Aldebaran W.	39 5 24	3193	40 31 42	3187	41 58 7	3183	43 24 37	3177
	Mars E.	22 16 12	3078	20 47 35	3081	19 19 2	3086	17 50 35	3090
	Jupiter E.	23 43 9	3132	22 15 38	3145	20 48 23	3158	19 21 24	3172
	Regulus E.	42 30 38	3102	41 2 31	3105	39 34 27	3108	38 6 27	3111
16	SUN W.	120 44 8	3465	122 5 11	3463	123 26 16	3461	124 47 24	3457
	Aldebaran W.	50 38 30	3155	52 5 33	3150	53 32 42	3145	54 59 57	3141
	Regulus E.	30 47 19	3124	29 19 38	3127	27 52 1	3130	26 24 28	3133
	Saturn E.	109 21 51	3075	107 53 11	3073	106 24 28	3071	104 55 43	3068
17	Aldebaran W.	62 17 46	3113	63 45 40	3106	65 13 42	3100	66 41 52	3093
	Spica ♀ E.	72 51 48	3059	71 22 48	3055	69 53 43	3050	68 24 32	3044
	Saturn E.	97 30 58	3049	96 1 46	3044	94 32 28	3039	93 3 4	3034
18	Aldebaran W.	74 4 46	3057	75 33 48	3050	77 2 59	3042	78 32 20	3034
	Pollux W.	29 53 21	3013	31 23 18	3005	32 53 24	2998	34 23 39	2990
	Spica ♀ E.	60 56 51	3014	59 26 56	3008	57 56 53	3001	56 26 41	2993
	Saturn E.	85 34 17	3003	84 4 8	2997	82 33 51	2989	81 3 24	2981
19	Aldebaran W.	86 1 32	2993	87 31 54	2984	89 2 27	2975	90 33 11	2966
	Pollux W.	41 57 28	2948	43 28 46	2940	45 0 14	2931	46 31 53	2922
	Mars W.	25 31 52	2961	27 2 54	2952	28 34 7	2943	30 5 31	2934
	Jupiter W.	24 51 33	2992	26 21 56	2977	27 52 37	2963	29 23 36	2950
	Spica ♀ E.	48 53 23	2955	47 22 14	2947	45 50 55	2939	44 19 26	2931
	Saturn E.	73 28 46	2942	71 57 20	2934	70 25 44	2925	68 53 57	2916
20	Pollux W.	54 13 5	2876	55 45 55	2866	57 18 58	2857	58 52 12	2847
	Mars W.	37 45 24	2888	39 17 58	2880	40 50 43	2870	42 23 40	2861
	Jupiter W.	37 2 32	2889	38 35 5	2878	40 7 52	2867	41 40 53	2856
	Spica ♀ E.	36 39 25	2890	35 6 54	2882	33 34 12	2874	32 1 20	2866
	Saturn E.	61 12 15	2872	59 39 20	2863	58 6 14	2853	56 32 55	2845
	Antares E.	82 28 25	2875	80 55 34	2866	79 22 31	2856	77 49 16	2846
21	Pollux W.	66 41 31	2799	68 16 0	2789	69 50 42	2780	71 25 36	2771
	Mars W.	50 11 23	2815	51 45 31	2806	53 19 51	2797	54 54 23	2787
	Jupiter W.	49 29 27	2803	51 3 51	2793	52 38 28	2782	54 13 19	2772
	Regulus W.	30 20 42	2842	31 54 16	2828	33 28 7	2815	35 2 15	2803
	Spica ♀ E.	24 14 40	2834	22 40 56	2830	21 7 7	2826	19 33 13	2822
	Saturn E.	48 43 33	2801	47 9 6	2792	45 34 28	2783	43 59 38	2775
	Antares E.	69 59 54	2799	68 25 25	2789	66 50 43	2780	65 15 49	2770
22	Mars W.	62 50 6	2742	64 25 50	2733	66 1 46	2724	67 37 54	2715
	Jupiter W.	62 10 49	2723	63 46 58	2713	65 23 20	2704	66 59 55	2695
	Regulus W.	42 56 47	2745	44 32 27	2735	46 8 21	2725	47 44 28	2714
	Saturn E.	36 2 49	2736	34 26 57	2730	32 50 56	2723	31 14 46	2717
	Antares E.	57 18 10	2723	55 42 1	2713	54 5 39	2704	52 29 5	2695

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.	
23	Mars W.	69 14 14	2707	70 50 45	2698	72 27 28	2689	74 4 22	2680	
	Jupiter W.	68 36 42	2686	70 13 41	2676	71 50 53	2667	73 28 17	2658	
	Regulus W.	49 20 49	2704	50 57 24	2695	52 34 11	2684	54 11 12	2674	
	Saturn E.	29 38 29	2712	28 2 5	2707	26 25 35	2704	24 49 1	2700	
	Antares E.	50 52 19	2687	49 15 21	2678	47 38 11	2669	46 0 49	2660	
24	Mars W.	82 11 45	2639	83 49 47	2631	85 28 0	2623	87 6 24	2614	
	Jupiter W.	81 38 17	2615	83 16 52	2606	84 55 39	2597	86 34 38	2588	
	Regulus W.	62 19 30	2628	63 57 47	2619	65 36 16	2610	67 14 57	2601	
	Antares E.	37 51 3	2617	36 12 31	2609	34 33 48	2601	32 54 54	2592	
	α Aquilæ E.	89 33 8	3455	88 11 54	3447	86 50 31	3442	85 29 2	3432	
25	Mars W.	95 21 6	2577	97 0 33	2569	98 40 11	2561	100 20 0	2552	
	Jupiter W.	94 52 20	2549	96 32 25	2542	98 12 40	2534	99 53 6	2525	
	Regulus W.	75 31 21	2560	77 11 11	2551	78 51 13	2543	80 31 27	2534	
	Spica ♀ W.	21 31 21	2587	23 10 34	2574	24 50 5	2562	26 29 53	2553	
	Antares E.	24 37 44	2556	22 57 48	2549	21 17 43	2543	19 37 29	2537	
26	α Aquilæ E.	78 40 51	3435	77 19 14	3439	75 57 42	3445	74 36 16	3432	
	Mars W.	108 41 37	2517	110 22 26	2510	112 3 25	2503	113 44 34	2497	
	Jupiter W.	108 17 55	2489	109 59 24	2482	111 41 2	2475	113 22 50	2468	
	Regulus W.	88 55 18	2496	90 36 37	2488	92 18 7	2482	93 59 46	2474	
	Spica ♀ W.	34 52 30	2501	36 33 42	2492	38 15 6	2484	39 56 42	2474	
27	α Aquilæ E.	67 51 47	3516	66 31 41	3535	65 11 56	3558	63 52 36	3584	
	Sun E.	129 7 42	2818	127 33 38	2811	125 59 24	2802	124 24 59	2794	
	Spica ♀ W.	48 27 37	2435	50 10 22	2428	51 53 17	2420	53 36 23	2412	
	Saturn W.	24 23 36	2464	26 5 40	2451	27 48 2	2438	29 30 42	2427	
	Fomalhaut E.	80 53 27	2613	79 14 50	2610	77 36 8	2605	75 57 20	2600	
28	Sun E.	116 30 10	2753	114 54 40	2745	113 19 0	2738	111 43 10	2731	
	Spica ♀ W.	62 14 33	2377	63 58 41	2369	65 43 1	2362	67 27 30	2354	
	Saturn W.	38 7 50	2378	39 51 56	2369	41 36 15	2361	43 20 46	2353	
	Fomalhaut E.	67 42 8	2588	66 2 56	2587	64 23 43	2587	62 44 30	2580	
	α Pegasi E.	88 51 37	2721	87 15 25	2716	85 39 7	2711	84 2 41	2704	
29	Sun E.	103 41 24	2691	102 4 32	2684	100 27 30	2676	98 50 18	2669	
	Spica ♀ W.	76 12 22	2322	77 57 49	2316	79 43 25	2310	81 29 10	2304	
	Saturn W.	52 6 7	2316	53 51 43	2308	55 37 31	2302	57 23 27	2295	
	Antares W.	30 18 15	2322	32 3 43	2315	33 49 21	2309	35 35 8	2302	
	Fomalhaut E.	54 29 5	2606	52 50 18	2614	51 11 42	2623	49 33 18	2631	
30	α Pegasi E.	75 59 23	2696	74 22 37	2696	72 45 52	2697	71 9 8	2695	
	Sun E.	90 41 54	2634	89 3 45	2627	87 25 26	2621	85 46 59	2613	
	Saturn W.	66 15 31	2265	68 2 22	2259	69 49 22	2254	71 36 29	2249	
	Antares W.	44 26 22	2272	46 13 3	2267	47 59 51	2262	49 46 47	2254	
	Fomalhaut E.	41 26 13	2730	39 50 13	2761	38 14 54	2797	36 40 22	2835	
31	α Pegasi E.	63 6 45	2729	61 30 44	2741	59 54 58	2753	58 19 28	2767	
	Sun E.	77 32 30	2583	75 53 11	2577	74 13 45	2572	72 34 11	2566	
	Saturn W.	80 33 55	2226	82 21 43	2222	84 9 37	2219	85 57 36	2216	
	Antares W.	58 43 13	2235	60 30 49	2231	62 18 31	2227	64 6 18	2224	
	α Pegasi E.	50 27 45	2879	48 54 59	2912	47 22 55	2949	45 51 38	2992	
	Sun E.	64 14 36	2543	62 34 23	2539	60 54 4	2535	59 13 40	2531	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^b .	P.L. of diff.	XVIII ^b .	P.L. of diff.	XXI ^b .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
23	Mars W.	75 41 28	2672	77 18 45	2664	78 56 13	2655	80 33 53	2646
	Jupiter W.	75 5 53	2649	76 43 41	2640	78 21 41	2632	79 59 53	2623
	Regulus W.	55 48 26	2665	57 25 53	2655	59 3 33	2646	60 41 25	2637
	Saturn E.	23 12 24	2702	21 35 46	2704	19 59 11	2708	18 22 42	2715
	Antares E.	44 23 15	2651	42 45 29	2643	41 7 32	2634	39 29 23	2626
24	Mars W.	88 44 59	2607	90 23 45	2599	92 2 41	2591	93 41 48	2583
	Jupiter W.	88 13 48	2581	89 53 9	2572	91 32 42	2564	93 12 26	2557
	Regulus W.	68 53 51	2593	70 32 55	2584	72 12 12	2575	73 51 41	2567
	Antares E.	31 15 49	2585	29 36 33	2577	27 57 7	2570	26 17 31	2562
	α Aquilæ E.	84 7 28	3434	82 45 50	3432	81 24 10	3432	80 2 30	3433
25	Mars W.	101 59 59	2546	103 40 8	2538	105 20 28	2531	107 0 58	2525
	Jupiter W.	101 33 43	2519	103 14 30	2511	104 55 28	2504	106 36 36	2496
	Regulus W.	82 11 52	2527	83 52 28	2520	85 33 14	2512	87 14 11	2504
	Spica ♀ W.	28 9 56	2540	29 50 14	2530	31 30 46	2520	33 11 31	2510
	Antares E.	17 57 7	2532	16 16 38	2528	14 36 3	2525	12 55 25	2524
	α Aquilæ E.	73 14 58	3461	71 53 50	3472	70 32 54	3484	69 12 12	3499
26	Mars W.	115 25 52	2489	117 7 21	2482	118 48 59	2476	120 30 46	2470
	Jupiter W.	115 4 47	2461	116 46 55	2454	118 29 13	2448	120 11 40	2441
	Regulus W.	95 41 36	2466	97 23 37	2459	99 5 48	2452	100 48 9	2445
	Spica ♀ W.	41 38 30	2467	43 20 30	2459	45 2 41	2451	46 45 3	2443
	α Aquilæ E.	62 33 44	3611	61 15 22	3642	59 57 33	3678	58 40 23	3722
	Sun E.	122 50 23	2735	121 15 36	2777	119 40 38	2769	118 5 29	2761
27	Spica ♀ W.	55 19 40	2405	57 3 8	2398	58 46 46	2391	60 30 34	2383
	Saturn W.	31 13 38	2416	32 56 50	2406	34 40 16	2396	36 23 56	2387
	Fomalhaut E.	74 18 27	2597	72 39 28	2594	71 0 25	2591	69 21 18	2589
	Sun E.	110 7 9	2722	108 30 58	2714	106 54 37	2706	105 18 5	2699
28	Spica ♀ W.	69 12 9	2348	70 56 58	2342	72 41 56	2335	74 27 4	2328
	Saturn W.	45 5 28	2345	46 50 22	2338	48 35 26	2330	50 20 41	2323
	Fomalhaut E.	61 5 18	2589	59 26 8	2592	57 47 2	2595	56 8 0	2600
	α Pegasi E.	82 26 9	2703	80 49 33	2699	79 12 52	2697	77 36 8	2696
	Sun E.	97 12 57	2661	95 35 25	2654	93 57 44	2648	92 19 54	2641
29	Spica ♀ W.	83 15 4	2298	85 1 7	2292	86 47 19	2286	88 33 39	2280
	Saturn W.	59 9 33	2289	60 55 49	2283	62 42 14	2277	64 28 48	2270
	Antares W.	37 21 5	2296	39 7 11	2289	40 53 26	2283	42 39 50	2278
	Fomalhaut E.	47 55 10	2648	46 17 20	2663	44 39 51	2682	43 2 47	2704
	α Pegasi E.	69 32 27	2702	67 55 50	2707	66 19 20	2713	64 42 58	2720
	Sun E.	84 8 22	2607	82 29 37	2601	80 50 43	2594	79 11 40	2589
30	Saturn W.	73 23 44	2244	75 11 6	2239	76 58 36	2235	78 46 12	2230
	Antares W.	51 33 51	2251	53 21 2	2247	55 8 19	2243	56 55 43	2239
	Fomalhaut E.	35 6 44	2888	33 34 10	2947	32 2 51	3017	30 33 0	3099
	α Pegasi E.	56 44 16	2783	55 9 26	2803	53 35 2	2825	52 1 7	2851
	Sun E.	70 54 29	2561	69 14 41	2556	67 34 46	2551	65 54 44	2547
31	Saturn W.	87 45 40	2213	89 33 49	2211	91 22 1	2208	93 10 17	2206
	Antares W.	65 54 9	2221	67 42 5	2219	69 30 5	2217	71 18 8	2215
	α Pegasi E.	44 21 15	3041	42 51 53	3096	41 23 38	3158	39 56 39	3228
	Sun E.	57 33 12	2529	55 52 39	2527	54 12 3	2524	52 31 23	2522

CONFIGURATIONS OF THE SATELLITES OF JUPITER.

At 11^h, MEAN TIME.

Day of the Month.	West.	East.
1	•1 ○	2• 3• •4
2	2• 3• ○ 1•	•4
3	•1 ● 3•	•2 ○ 4•
4	•3 1• ○	2• 4•
5	•3 ○	•1 4•
6	•2 1• ○	4• •3
7	4• ○	•1 ² 3•
8	4• •1 ○	2• 3•
9	4• 2• 3• ○ 1•	
10	4• 3• •2 •1 ○	
11	•4 •3 ○	•2 1• ○
12	•4 •3 ○ •1	○ •2
13	•4 •2 1• ○	•3
14	•4 ○	•2 •1 3•
15	•1 ○	2• 3• •4 ●
16	2• 3• ○ 1•	•4
17	3• •2 •1 ○	•4
18	•3 1• ○	•2 •4
19	● •1 •3 ○ 2•	4•
20	•2 1• ○	•3 4•
21	● •2 ○	•1 •3 4•
22	•1 ○	2• 3• ⁴
23	2• ○	4• 1• ○
24	3• 4• •2 •1 ○	
25	4• •3 ○ 1•	•2
26	4• •3 ○ 2•	•1 ●
27	4• 2• 1• ○	•3
28	•4 ○	•1 •3 ●
29	•4 1• ○	2• 3•
30	•4 2• ○ 3• 1•	
31	3• •2 •1 ○	

This Table represents, at 11^h after *Mean Noon* of each day of the month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the *shadow*, of Jupiter.

ECLIPSES OF THE SATELLITES OF JUPITER.

SATELLITE.	Day of the Month.	Mean Time.	Sidereal Time.	PHASE as seen in an inverting Telescope.
I.	1	^h 18 ^m 50 ^s 20·8	^h 17 ^m 29 ^s 45·8	Em.
	3*	13 18 57·6	12 5 21·4	Em.
	5*	7 47 33·2	6 40 55·6	Em.
	7	2 16 11·6	1 16 32·7	Em.
	8	20 44 48·0	19 52 7·8	Em.
	10*	15 13 26·8	14 27 45·2	Em.
	12*	9 42 3·9	9 3 21·0	Em.
	14	4 10 44·0	3 38 59·7	Em.
	15	22 39 22·0	22 14 36·4	Em.
	17	17 8 3·0	16 50 16·1	Em.
	19*	11 36 41·1	11 25 52·9	Em.
	21	6 5 23·0	6 1 33·4	Em.
	23	0 34 1·8	0 37 11·0	Em.
	24	19 2 43·9	19 12 51·7	Em.
	26*	13 31 24·0	13 48 30·5	Em.
	28*	8 0 6·6	8 24 11·8	Em.
	30	2 28 47·1	2 59 50·9	Em.
	31	20 57 31·0	21 35 33·6	Em.
II.	3	17 19 56·4	16 6 59·7	Em.
	7*	6 38 1·9	5 39 6·0	Em.
	10	19 57 6·8	19 12 11·8	Em.
	14*	9 15 13·1	8 44 18·8	Em.
	17	22 34 15·8	22 17 22·5	Em.
	21*	11 52 22·1	11 49 29·5	Em.
	25	1 11 22·0	1 22 30·4	Em.
	28*	14 29 29·6	14 54 38·7	Em.
III.	5	19 46 57·5	18 42 18·1	Em.
	12	23 46 15·6	23 9 51·4	Em.
	20	0 12 8·2	0 3 24·1	Im.
	20	3 45 29·4	3 37 20·4	Em.
	27	4 11 58·8	4 31 30·0	Im.
	27*	7 45 18·8	8 5 25·0	Em.
IV.	15	18 12 52·7	17 47 23·4	Im.
	15	22 57 15·3	22 32 32·6	Em.

APPROXIMATE SIDEREAL TIMES
OF THE
OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER,
AND OF THE
TRANSITS OF THE SATELLITES AND THEIR SHADOWS
OVER THE DISC OF THE PLANET.

Satellite.	OCCULTATIONS.		TRANSITS OF SATELLITES.		TRANSITS OF SHADOWS.	
	Immersion.	Emersion.	Ingress.	Egress.	Ingress.	Egress.
	d h m	d h m	d h m	d h m	d h m	d h m
I.	1* 14 32		2* 11 52	2* 14 12	2* 12 33	2* 14 53
	3* 9 5		4* 6 25	4* 8 46	4* 7 8	4* 9 29
	5 3 39		6 0 59	6 3 19	6 1 44	6 4 5
	6 22 12		7 19 32	7 21 53	7 20 20	7 22 41
	8 16 46		9* 14 6	9 16 27	9* 14 55	9 17 16
	10* 11 19		11* 8 40	11* 11 1	11* 9 31	11* 11 52
	12 5 53	In	13 3 14	13 5 35	13 4 7	13* 6 28
	14 0 27	the	14 21 48	15 0 9	14 22 43	15 1 3
	15 19 1	Shadow.	16 16 22	16 18 43	16 17 18	16 19 39
	17* 13 35		18* 10 56	18* 13 17	18* 11 54	18* 14 15
	19* 8 9		20 5 30	20* 7 51	20 6 30	20* 8 51
	21 2 43		22 0 5	22 2 25	22 1 6	22 3 27
	22 21 17		23 18 39	23 21 0	23 19 42	23 22 2
	24 15 51		25* 13 13	25 15 34	25* 14 17	25 16 38
	26* 10 25		27* 7 47	27* 10 8	27* 8 53	27* 11 14
	28 5 0		29 2 22	29 4 43	29 3 29	29 5 50
	29 23 34		30 20 57	30 23 18	30 22 5	30 0 25
	31 18 9					
II.	3* 11 45		1 16 48	1 19 45	1 18 10	1 21 7
	7 1 9		5* 6 10	5* 9 7	5* 7 41	5* 10 37
	10* 14 34	In	8 19 34	8 22 31	8 21 12	9 0 9
	14 3 59	the	12* 8 57	12* 11 54	12* 10 43	12* 13 40
	17 17 25	Shadow.	15 22 22	16 1 19	16 0 15	16 3 12
	21 6 51		19* 11 46	19* 14 43	19* 13 46	19 16 43
	24 20 18		23 1 12	23 4 9	23 3 18	23 6 15
	28* 9 45		26* 14 38	26 17 34	26 16 49	26 19 46
	31 23 13		30 4 5	30 7 1	30 6 21	30* 9 18
III.	5* 12 3	In the	1 22 0	2 1 44	2 0 43	2 4 27
	12 15 59	Shadow.	9 1 54	9 5 38	9 5 11	9* 8 54
	19 19 58	19 23 42	16 5 52	16* 9 35	16* 9 38	16* 13 22
	26 0 3	27 3 46	23* 9 54	23* 13 38	23* 14 6	23 17 50
			30* 14 0	30 17 44	30 18 34	30 22 17
IV.	15* 8 57	15* 13 52	7 23 10	7 4 4	7* 6 24	7* 11 20
			23 15 44	23 20 38	24 1 32	24 6 28

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to sub. from Apparent Time.	Diff. for 1 hour.
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.			
		h m s	s	° ' "	"	m s	m s	s
Sat.	1	0 42 30.22	9.098	N. 4 34 32.8	57.73	1 4.43	3 57.02	0.756
Sun.	2	0 46 8.57	9.104	4 57 38.3	57.52	1 4.45	3 38.87	0.750
Mon.	3	0 49 47.07	9.110	5 20 38.7	57.28	1 4.47	3 20.87	0.744
Tues.	4	0 53 25.71	9.117	5 43 33.4	57.03	1 4.49	3 3.01	0.737
Wed.	5	0 57 4.52	9.125	6 6 22.2	56.77	1 4.51	2 45.32	0.729
Thur.	6	1 0 43.53	9.133	6 29 4.7	56.50	1 4.54	2 27.82	0.721
Frid.	7	1 4 22.73	9.143	6 51 40.7	56.20	1 4.57	2 10.52	0.712
Sat.	8	1 8 2.15	9.152	7 14 9.5	55.89	1 4.61	1 53.43	0.703
Sun.	9	1 11 41.80	9.162	7 36 30.9	55.57	1 4.65	1 36.57	0.693
Mon.	10	1 15 21.68	9.173	7 58 44.6	55.23	1 4.69	1 19.94	0.682
Tues.	11	1 19 1.83	9.185	8 20 50.2	54.88	1 4.73	1 3.58	0.670
Wed.	12	1 22 42.26	9.196	8 42 47.3	54.51	1 4.77	0 47.49	0.659
Thur.	13	1 26 22.97	9.209	9 4 35.5	54.13	1 4.82	0 31.68	0.645
Frid.	14	1 30 3.99	9.223	9 26 14.7	53.74	1 4.87	0 16.19	0.632
Sat.	15	1 33 45.33	9.236	9 47 44.4	53.33	1 4.92	0 1.02	0.618
Sun.	16	1 37 27.00	9.251	10 9 4.2	52.90	1 4.97	0 13.82	0.604
Mon.	17	1 41 9.03	9.267	10 30 13.8	52.47	1 5.02	0 28.31	0.588
Tues.	18	1 44 51.43	9.283	10 51 13.1	52.02	1 5.08	0 42.41	0.572
Wed.	19	1 48 34.22	9.300	11 12 1.6	51.56	1 5.14	0 56.13	0.555
Thur.	20	1 52 17.43	9.318	11 32 39.1	51.09	1 5.20	1 9.44	0.537
Frid.	21	1 56 1.07	9.336	11 53 5.3	50.60	1 5.27	1 22.32	0.519
Sat.	22	1 59 45.14	9.356	12 13 19.8	50.11	1 5.33	1 34.77	0.500
Sun.	23	2 3 29.68	9.376	12 33 22.5	49.60	1 5.40	1 46.76	0.479
Mon.	24	2 7 14.70	9.396	12 53 12.9	49.08	1 5.46	1 58.26	0.459
Tues.	25	2 11 0.21	9.417	13 12 50.7	48.54	1 5.53	2 9.28	0.438
Wed.	26	2 14 46.22	9.438	13 32 15.7	48.00	1 5.61	2 19.80	0.418
Thur.	27	2 18 32.74	9.460	13 51 27.6	47.43	1 5.68	2 29.82	0.399
Frid.	28	2 22 19.78	9.483	14 10 25.9	46.85	1 5.75	2 39.30	0.378
Sat.	29	2 26 7.36	9.505	14 29 10.4	46.26	1 5.83	2 48.26	0.350
Sun.	30	2 29 55.47	9.528	14 47 40.7	45.66	1 5.90	2 56.67	0.328
Mon.	31	2 33 44.13		N. 15 5 56.5		1 5.98	3 4.54	

* Mean Time of the Semidiameter passing may be found by subtracting 0^m 18 from the *Sidereal Time*.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subt. from added to Mean Time.	Sidereal Time.
		Right Ascension.	Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Sat.	1	0 42 29.62	N. 4 34 29.0	16 0.7	3 57.07	0 38 32.55
Sun.	2	0 46 8.02	4 57 34.8	16 0.5	3 38.92	0 42 29.10
Mon.	3	0 49 46.56	5 20 35.5	16 0.2	3 20.91	0 46 25.65
Tues.	4	0 53 25.25	5 43 30.5	15 59.9	3 3.05	0 50 22.20
Wed.	5	0 57 4.10	6 6 19.6	15 59.6	2 45.35	0 54 18.75
Thur.	6	1 0 43.15	6 29 2.4	15 59.4	2 27.85	0 58 15.30
Frid.	7	1 4 22.40	6 51 38.6	15 59.1	2 10.55	1 2 11.85
Sat.	8	1 8 1.86	7 14 7.7	15 58.8	1 53.45	1 6 8.41
Sun.	9	1 11 41.55	7 36 29.4	15 58.5	1 36.59	1 10 4.96
Mon.	10	1 15 21.48	7 58 43.3	15 58.3	1 19.96	1 14 1.52
Tues.	11	1 19 1.67	8 20 49.2	15 58.0	1 3.59	1 17 58.08
Wed.	12	1 22 42.14	8 42 46.5	15 57.7	0 47.50	1 21 54.64
Thur.	13	1 26 22.89	9 4 35.0	15 57.5	0 31.69	1 25 51.20
Frid.	14	1 30 3.95	9 26 14.4	15 57.2	0 16.19	1 29 47.76
Sat.	15	1 33 45.33	9 47 44.3	15 56.9	0 1.02	1 33 44.31
Sun.	16	1 37 27.04	10 9 4.4	15 56.7	0 13.82	1 37 40.86
Mon.	17	1 41 9.10	10 30 14.2	15 56.4	0 28.31	1 41 37.41
Tues.	18	1 44 51.54	10 51 13.7	15 56.2	0 42.42	1 45 33.96
Wed.	19	1 48 34.37	11 12 2.4	15 55.9	0 56.14	1 49 30.51
Thur.	20	1 52 17.61	11 32 40.1	15 55.7	1 9.45	1 53 27.06
Frid.	21	1 56 1.28	11 53 6.4	15 55.4	1 22.33	1 57 23.61
Sat.	22	1 59 45.39	12 13 21.1	15 55.1	1 34.78	2 1 20.17
Sun.	23	2 3 29.96	12 33 23.9	15 54.9	1 46.77	2 5 16.73
Mon.	24	2 7 15.01	12 53 14.5	15 54.6	1 58.28	2 9 13.29
Tues.	25	2 11 0.55	13 12 52.5	15 54.4	2 9.30	2 13 9.85
Wed.	26	2 14 46.59	13 32 17.6	15 54.1	2 19.82	2 17 6.41
Thur.	27	2 18 33.13	13 51 29.5	15 53.9	2 29.84	2 21 2.97
Frid.	28	2 22 20.20	14 10 28.0	15 53.6	2 39.32	2 24 59.52
Sat.	29	2 26 7.80	14 29 12.6	15 53.4	2 48.28	2 28 56.08
Sun.	30	2 29 55.94	14 47 42.9	15 53.1	2 56.69	2 32 52.63
Mon.	31	2 33 44.62	N. 15 5 58.8	15 52.9	3 4.56	2 36 49.18

* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	11 33 22.2	S. 0.50	0.0000768	16 16.6	16 16.7	59 43.9	59 44.1
2	12 32 28.8	0.45	0.0002041	16 16.0	16 14.7	59 41.8	59 36.9
3	13 31 33.6	0.36	0.0003309	16 12.6	16 9.7	59 29.1	59 18.4
4	14 30 36.3	0.26	0.0004569	16 6.0	16 1.8	59 5.1	58 49.4
5	15 29 37.0	S. 0.14	0.0005822	15 56.9	15 51.6	58 31.5	58 12.0
6	16 28 35.8	0.00	0.0007066	15 45.8	15 39.8	57 50.8	57 28.9
7	17 27 32.7	N. 0.14	0.0008302	15 33.7	15 27.6	57 6.6	56 44.0
8	18 26 27.3	0.27	0.0009528	15 21.5	15 15.7	56 21.6	56 0.2
9	19 25 19.7	0.40	0.0010745	15 10.2	15 5.2	55 40.2	55 21.7
10	20 24 9.9	0.51	0.0011955	15 0.6	14 56.6	55 5.0	54 50.3
11	21 22 58.0	0.60	0.0013156	14 53.2	14 50.5	54 37.9	54 28.0
12	22 21 43.7	0.66	0.0014352	14 48.5	14 47.2	54 20.4	54 15.7
13	23 20 27.1	0.69	0.0015543	14 46.6	14 46.7	54 13.5	54 14.0
14	24 19 8.4	0.69	0.0016730	14 47.5	14 48.9	54 16.8	54 22.1
15	25 17 47.3	0.67	0.0017913	14 50.9	14 53.7	54 29.5	54 39.5
16	26 16 24.0	0.60	0.0019093	14 56.8	15 0.5	54 51.0	55 4.4
17	27 14 58.4	0.52	0.0020271	15 4.5	15 8.9	55 19.3	55 35.3
18	28 13 30.8	0.42	0.0021447	15 13.5	15 18.4	55 52.4	56 10.3
19	29 12 1.1	0.30	0.0022621	15 23.3	15 28.3	56 28.3	56 46.5
20	30 10 29.5	0.17	0.0023795	15 33.2	15 37.9	57 4.6	57 22.0
21	31 8 56.0	N. 0.04	0.0024966	15 42.5	15 46.8	57 38.8	57 54.5
22	32 7 20.8	S. 0.08	0.0026134	15 50.8	15 54.4	58 9.2	58 22.3
23	33 5 43.9	0.19	0.0027300	15 57.6	16 0.3	58 34.0	58 44.2
24	34 4 5.3	0.28	0.0028463	16 2.7	16 4.7	58 52.9	59 0.0
25	35 2 25.2	0.35	0.0029622	16 6.1	16 7.2	59 5.2	59 9.3
26	36 0 43.4	0.39	0.0030774	16 7.9	16 8.3	59 12.0	59 13.5
27	36 59 0.2	0.40	0.0031918	16 8.4	16 8.1	59 13.7	59 12.8
28	37 57 15.5	0.39	0.0033051	16 7.6	16 6.8	59 10.9	59 7.8
29	38 55 29.2	0.34	0.0034173	16 5.6	16 4.1	59 3.6	58 57.8
30	39 53 41.3	0.25	0.0035282	16 2.2	16 0.0	58 51.0	58 43.0
31	40 51 51.9	S. 0.16	0.0036377	15 57.3	15 54.3	58 33.2	58 22.1

MEAN TIME.

THE MOON'S

Day of the Week.	Day of the Month.	Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
Sat.	1	320 53 11.5	328 7 20.2	S. 4 57 5.8	S. 4 41 46.5	25.6	21 48.2
Sun.	2	335 21 11.3	342 34 3.6	4 21 57.7	3 58 1.5	26.6	22 38.8
Mon.	3	349 45 14.8	356 54 4.5	3 30 24.0	2 59 36.4	27.6	23 27.1
Tues.	4	3 59 53.0	11 2 3.4	2 26 13.1	1 50 52.0	28.6	♂
Wed.	5	18 0 5.2	24 53 31.1	S. 1 14 9.6	S. 0 36 45.3	0.2	0 14.4
Thur.	6	31 42 0.6	38 25 20.6	N. 0 0 45.9	N. 0 37 49.1	1.2	1 1.8
Frid.	7	45 3 23.9	51 36 9.8	1 13 52.8	1 48 29.8	2.2	1 50.3
Sat.	8	58 3 43.7	64 26 16.8	2 21 15.7	2 51 50.2	3.2	2 40.2
Sun.	9	70 44 6.2	76 57 31.7	3 19 56.6	3 45 20.3	4.2	3 31.8
Mon.	10	83 6 59.6	89 12 56.9	4 7 50.7	4 27 19.0	5.2	4 24.4
Tues.	11	95 15 54.7	101 16 24.7	4 43 38.6	4 56 44.5	6.2	5 16.9
Wed.	12	107 15 2.0	113 12 19.7	5 6 32.6	5 13 1.1	7.2	6 8.4
Thur.	13	119 8 54.2	125 5 19.1	5 16 7.5	5 15 51.4	8.2	6 57.8
Frid.	14	131 2 9.6	136 59 59.0	5 12 12.3	5 5 11.1	9.2	7 44.8
Sat.	15	142 59 18.6	149 0 39.5	4 54 49.1	4 41 9.6	10.2	8 29.5
Sun.	16	155 4 29.6	161 11 14.8	4 24 16.1	4 4 14.7	11.2	9 12.5
Mon.	17	167 21 17.5	173 34 56.9	3 41 12.6	3 15 20.4	12.2	9 54.5
Tues.	18	179 52 29.0	186 14 6.3	2 46 49.8	2 15 57.1	13.2	10 36.6
Wed.	19	192 39 56.2	199 10 3.1	1 43 0.3	N. 1 8 21.1	14.2	11 19.8
Thur.	20	205 44 26.3	212 23 2.0	N. 0 32 24.9	S. 0 4 21.2	15.2	12 5.4
Frid.	21	219 5 41.7	225 52 14.3	S. 0 41 26.0	1 18 17.3	16.2	12 54.5
Sat.	22	232 42 24.3	239 35 55.7	1 54 20.4	2 29 1.3	17.2	13 48.0
Sun.	23	246 32 27.1	253 31 38.7	3 1 45.0	3 31 58.4	18.2	14 46.0
Mon.	24	260 33 6.4	267 36 28.9	3 59 9.6	4 22 50.1	19.2	15 47.5
Tues.	25	274 41 22.0	281 47 22.7	4 42 35.1	4 58 3.9	20.2	16 50.2
Wed.	26	288 54 8.2	296 1 18.0	5 8 59.4	5 15 11.3	21.2	17 51.5
Thur.	27	303 8 31.7	310 15 29.0	5 16 32.7	5 13 3.4	22.2	18 49.4
Frid.	28	317 21 52.1	324 27 22.7	5 4 46.4	4 51 51.4	23.2	19 43.2
Sat.	29	331 31 42.9	338 34 36.7	4 34 32.8	4 13 8.2	24.2	20 33.3
Sun.	30	345 35 46.7	352 34 57.5	3 48 0.3	3 19 35.2	25.2	21 20.9
Mon.	31	359 31 51.5	6 26 14.5	S. 2 48 22.1	S. 2 14 52.0	26.2	22 7.3

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 1.				MONDAY 3.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	21 39 49.14	S. 19 14 0.7	128.72	0	23 27 53.59	S. 7 17 4.1	163.90
1	21 42 11.73	19 1 8.4	129.87	1	23 30 2.14	7 0 40.7	164.20
2	21 44 33.97	18 48 9.2	131.02	2	23 32 10.48	6 44 15.5	164.50
3	21 46 55.86	18 35 3.1	132.12	3	23 34 18.63	6 27 48.5	164.75
4	21 49 17.40	18 21 50.4	133.22	4	23 36 26.60	6 11 20.0	165.02
5	21 51 38.58	18 8 31.1	134.32	5	23 38 34.37	5 54 49.9	165.23
6	21 53 59.42	17 55 5.2	135.37	6	23 40 41.96	5 38 18.5	165.47
7	21 56 19.91	17 41 33.0	136.40	7	23 42 49.38	5 21 45.7	165.65
8	21 58 40.06	17 27 54.6	137.45	8	23 44 56.62	5 5 11.8	165.95
9	22 0 59.86	17 14 9.9	138.45	9	23 47 3.70	4 48 36.7	166.02
10	22 3 19.32	17 0 19.2	139.45	10	23 49 10.61	4 32 0.6	166.17
11	22 5 38.44	16 46 22.5	140.42	11	23 51 17.36	4 15 23.6	166.30
12	22 7 57.22	16 32 20.0	141.38	12	23 53 23.96	3 58 45.8	166.42
13	22 10 15.67	16 18 11.7	142.32	13	23 55 30.41	3 42 7.3	166.53
14	22 12 33.78	16 3 57.8	143.23	14	23 57 36.71	3 25 28.1	166.60
15	22 14 51.56	15 49 38.4	144.13	15	23 59 42.87	3 8 48.5	166.63
16	22 17 9.01	15 35 13.6	145.03	16	0 1 48.90	2 52 8.4	166.73
17	22 19 26.14	15 20 43.4	145.88	17	0 3 54.79	2 35 28.0	166.77
18	22 21 42.94	15 6 8.1	146.75	18	0 6 0.56	2 18 47.4	166.79
19	22 23 59.43	14 51 27.6	147.57	19	0 8 6.21	2 2 6.7	166.78
20	22 26 15.59	14 36 42.2	148.38	20	0 10 11.74	1 45 26.0	166.78
21	22 28 31.45	14 21 51.9	149.17	21	0 12 17.15	1 28 45.3	166.75
22	22 30 46.99	14 6 56.9	149.95	22	0 14 22.46	1 12 4.8	166.72
23	22 33 2.22	S. 13 51 57.2	150.72	23	0 16 27.67	S. 0 55 24.5	166.65
SUNDAY 2.				TUESDAY 4.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	22 35 17.15	S. 13 36 52.9	151.45	0	0 18 32.77	S. 0 38 44.6	166.57
1	22 37 31.78	13 21 44.2	152.17	1	0 20 37.78	0 22 5.2	166.48
2	22 39 46.11	13 6 31.2	152.87	2	0 22 42.70	S. 0 5 26.3	166.38
3	22 42 0.15	12 51 14.0	153.57	3	0 24 47.54	N. 0 11 12.0	166.25
4	22 44 13.89	12 35 52.6	154.23	4	0 26 52.29	0 27 49.5	166.12
5	22 46 27.35	12 20 27.2	154.88	5	0 28 56.97	0 44 26.2	165.97
6	22 48 40.52	12 4 57.9	155.50	6	0 31 1.58	1 1 2.0	165.80
7	22 50 53.41	11 49 24.9	156.13	7	0 33 6.12	1 17 36.8	165.62
8	22 53 6.03	11 33 48.1	156.72	8	0 35 10.60	1 34 10.5	165.43
9	22 55 18.38	11 18 7.8	157.30	9	0 37 15.02	1 50 43.1	165.22
10	22 57 30.45	11 2 24.0	157.87	10	0 39 19.39	2 7 14.4	164.98
11	22 59 42.26	10 46 36.8	158.42	11	0 41 23.71	2 23 44.3	164.75
12	23 1 53.81	10 30 46.3	158.93	12	0 43 27.98	2 40 12.8	164.50
13	23 4 5.10	10 14 52.7	159.45	13	0 45 32.21	2 56 39.8	164.23
14	23 6 16.14	9 58 56.0	159.93	14	0 47 36.41	3 13 5.2	163.95
15	23 8 26.93	9 42 56.4	160.42	15	0 49 40.58	3 29 28.9	163.65
16	23 10 37.48	9 26 53.9	160.87	16	0 51 44.72	3 45 50.8	163.33
17	23 12 47.79	9 10 48.7	161.32	17	0 53 48.84	4 2 10.8	163.00
18	23 14 57.86	8 54 40.8	161.73	18	0 55 52.94	4 18 28.8	162.67
19	23 17 7.70	8 38 30.4	162.13	19	0 57 57.02	4 34 44.8	162.30
20	23 19 17.31	8 22 17.6	162.52	20	1 0 1.10	4 50 58.6	161.93
21	23 21 26.71	8 6 2.5	162.90	21	1 2 5.17	5 7 10.2	161.55
22	23 23 35.88	7 49 45.1	163.25	22	1 4 9.24	5 23 19.4	161.15
23	23 25 44.84	7 33 25.6	163.58	23	1 6 13.31	5 39 26.3	160.75
24	23 27 53.59	S. 7 17 4.1		24	1 8 17.38	N. 5 55 30.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 5.				FRIDAY 7.			
0	h m s	N. ° ' "	"	0	h m s	N. ° ' "	"
0	1 8 17.38	5 55 30.7	160.30	0	2 48 50.06	17 32 44.3	124.87
1	1 10 21.47	6 11 32.5	159.85	1	2 50 58.53	17 45 13.5	123.85
2	1 12 25.57	6 27 31.6	159.40	2	2 53 7.15	17 57 36.6	122.82
3	1 14 29.69	6 43 28.0	158.92	3	2 55 15.93	18 9 53.5	121.78
4	1 16 33.83	6 59 21.5	158.45	4	2 57 24.85	18 22 4.2	120.75
5	1 18 38.00	7 15 12.2	157.95	5	2 59 33.93	18 34 8.7	119.68
6	1 20 42.19	7 30 59.9	157.43	6	3 1 43.16	18 46 6.8	118.62
7	1 22 46.43	7 46 44.5	156.90	7	3 3 52.54	18 57 58.5	117.55
8	1 24 50.70	8 2 25.9	156.38	8	3 6 2.08	19 9 43.8	116.47
9	1 26 55.01	8 18 4.2	155.82	9	3 8 11.78	19 21 22.6	115.38
10	1 28 59.36	8 33 39.1	155.27	10	3 10 21.63	19 32 54.9	114.27
11	1 31 3.77	8 49 10.7	154.68	11	3 12 31.64	19 44 20.5	113.17
12	1 33 8.22	9 4 38.8	154.10	12	3 14 41.81	19 55 39.5	112.05
13	1 35 12.73	9 20 3.4	153.50	13	3 16 52.14	20 6 51.8	110.92
14	1 37 17.30	9 35 24.4	152.88	14	3 19 2.61	20 17 57.3	109.80
15	1 39 21.94	9 50 41.7	152.25	15	3 21 13.25	20 28 56.1	108.63
16	1 41 26.64	10 5 55.2	151.62	16	3 23 24.05	20 39 47.9	107.50
17	1 43 31.40	10 21 4.9	150.97	17	3 25 35.01	20 50 32.9	106.32
18	1 45 36.25	10 36 10.7	150.28	18	3 27 46.12	21 1 10.8	105.17
19	1 47 41.17	10 51 12.4	149.62	19	3 29 57.39	21 11 41.8	103.98
20	1 49 46.16	11 6 10.1	148.93	20	3 32 8.82	21 22 5.7	102.80
21	1 51 51.24	11 21 3.7	148.23	21	3 34 20.40	21 32 22.5	101.60
22	1 53 56.41	11 35 53.1	147.50	22	3 36 32.15	21 42 32.1	100.40
23	1 56 1.67	N. 11 50 38.1	146.78	23	3 38 44.05	N. 21 52 34.5	99.20
THURSDAY 6.				SATURDAY 8.			
0	1 58 7.02	N. 12 5 18.8	146.03	0	3 40 56.10	N. 22 2 29.7	97.98
1	2 0 12.47	12 19 55.0	145.30	1	3 43 8.31	22 12 17.6	96.75
2	2 2 18.01	12 34 26.8	144.52	2	3 45 20.67	22 21 58.1	95.52
3	2 4 23.66	12 48 53.9	143.75	3	3 47 33.19	22 31 31.2	94.28
4	2 6 29.41	13 3 16.4	142.97	4	3 49 45.85	22 40 56.9	93.05
5	2 8 35.27	13 17 34.2	142.15	5	3 51 58.67	22 50 15.2	91.78
6	2 10 41.24	13 31 47.1	141.37	6	3 54 11.64	22 59 25.9	90.53
7	2 12 47.32	13 45 55.3	140.52	7	3 56 24.76	23 8 29.1	89.25
8	2 14 53.52	13 59 58.4	139.70	8	3 58 38.02	23 17 24.6	88.00
9	2 16 59.83	14 13 56.6	138.85	9	4 0 51.43	23 26 12.6	86.70
10	2 19 6.26	14 27 49.7	138.00	10	4 3 4.99	23 34 52.8	85.43
11	2 21 12.81	14 41 37.7	137.13	11	4 5 18.68	23 43 25.4	84.13
12	2 23 19.49	14 55 20.5	136.25	12	4 7 32.52	23 51 50.2	82.83
13	2 25 26.30	15 8 58.0	135.37	13	4 9 46.50	24 0 7.2	81.53
14	2 27 33.23	15 22 30.2	134.47	14	4 12 0.62	24 8 16.4	80.23
15	2 29 40.29	15 35 57.0	133.57	15	4 14 14.87	24 16 17.8	78.90
16	2 31 47.49	15 49 18.4	132.62	16	4 16 29.25	24 24 11.2	77.58
17	2 33 54.82	16 2 34.1	131.70	17	4 18 43.77	24 31 56.7	76.27
18	2 36 2.29	16 15 44.3	130.77	18	4 20 58.41	24 39 34.3	74.92
19	2 38 9.89	16 28 48.9	129.80	19	4 23 13.18	24 47 3.8	73.60
20	2 40 17.64	16 41 47.7	128.83	20	4 25 28.07	24 54 25.4	72.25
21	2 42 25.53	16 54 40.7	127.85	21	4 27 43.08	25 1 38.9	70.90
22	2 44 33.56	17 7 27.8	126.87	22	4 29 58.21	25 8 44.3	69.55
23	2 46 41.74	17 20 9.0	125.88	23	4 32 13.46	25 15 41.6	68.18
24	2 48 50.06	N. 17 32 44.3		24	4 34 28.82	N. 25 22 30.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 9.				TUESDAY 11.			
	^h ^m ^s	^o ['] ["]	["]		^h ^m ^s	^o ['] ["]	["]
0	4 34 28.82	N.25 22 30.7	66.83	0	6 23 47.94	N.28 4 52.8	0.88
1	4 36 44.29	25 29 11.7	65.45	1	6 26 4.18	28 4 47.5	2.27
2	4 38 59.86	25 35 44.4	64.10	2	6 28 20.32	28 4 33.9	3.67
3	4 41 15.53	25 42 9.0	62.72	3	6 30 36.37	28 4 11.9	5.07
4	4 43 31.31	25 48 25.3	61.33	4	6 32 52.32	28 3 41.5	6.47
5	4 45 47.19	25 54 33.3	59.95	5	6 35 8.16	28 3 2.7	7.83
6	4 48 3.16	26 0 33.0	58.58	6	6 37 23.90	28 2 15.7	9.23
7	4 50 19.22	26 6 24.5	57.18	7	6 39 39.53	28 1 20.3	10.60
8	4 52 35.36	26 12 7.6	55.78	8	6 41 55.04	28 0 16.7	11.98
9	4 54 51.60	26 17 42.3	54.40	9	6 44 10.43	27 59 4.8	13.37
10	4 57 7.91	26 23 8.7	53.00	10	6 46 25.70	27 57 44.6	14.73
11	4 59 24.30	26 28 26.7	51.60	11	6 48 40.85	27 56 16.3	16.10
12	5 1 40.77	26 33 36.3	50.20	12	6 50 55.86	27 54 39.7	17.47
13	5 3 57.31	26 38 37.5	48.78	13	6 53 10.73	27 52 54.9	18.80
14	5 6 13.91	26 43 30.2	47.38	14	6 55 25.47	27 51 2.1	20.18
15	5 8 30.58	26 48 14.5	45.97	15	6 57 40.07	27 49 1.0	21.52
16	5 10 47.31	26 52 50.3	44.57	16	6 59 54.52	27 46 51.9	22.85
17	5 13 4.09	26 57 17.7	43.15	17	7 2 8.82	27 44 34.8	24.20
18	5 15 20.92	27 1 36.6	41.72	18	7 4 22.96	27 42 9.6	25.53
19	5 17 37.80	27 5 46.9	40.32	19	7 6 36.95	27 39 36.4	26.87
20	5 19 54.72	27 9 48.8	38.88	20	7 8 50.78	27 36 55.2	28.18
21	5 22 11.67	27 13 42.1	37.47	21	7 11 4.44	27 34 6.1	29.52
22	5 24 28.66	27 17 26.9	36.05	22	7 13 17.94	27 31 9.0	30.83
23	5 26 45.68	N.27 21 3.2	34.62	23	7 15 31.27	N.27 28 4.1	32.13
MONDAY 10.				WEDNESDAY 12.			
	^h ^m ^s	^o ['] ["]	["]		^h ^m ^s	^o ['] ["]	["]
0	5 29 2.73	N.27 24 30.9	33.20	0	7 17 44.42	N.27 24 51.3	33.48
1	5 31 19.80	27 27 50.1	31.77	1	7 19 57.39	27 21 30.7	34.73
2	5 33 36.88	27 31 0.7	30.35	2	7 22 10.18	27 18 2.3	36.02
3	5 35 53.98	27 34 2.8	28.92	3	7 24 22.79	27 14 26.2	37.30
4	5 38 11.08	27 36 56.3	27.48	4	7 26 35.21	27 10 42.4	38.60
5	5 40 28.18	27 39 41.2	26.07	5	7 28 47.45	27 6 50.8	39.87
6	5 42 45.29	27 42 17.6	24.63	6	7 30 59.49	27 2 51.6	41.13
7	5 45 2.39	27 44 45.4	23.22	7	7 33 11.34	26 58 44.8	42.40
8	5 47 19.48	27 47 4.7	21.78	8	7 35 22.99	26 54 30.4	43.67
9	5 49 36.56	27 49 15.4	20.37	9	7 37 34.44	26 50 8.4	44.92
10	5 51 53.61	27 51 17.6	18.93	10	7 39 45.69	26 45 38.9	46.17
11	5 54 10.65	27 53 11.2	17.50	11	7 41 56.74	26 41 1.9	47.40
12	5 56 27.65	27 54 56.2	16.08	12	7 44 7.58	26 36 17.5	48.65
13	5 58 44.63	27 56 32.7	14.67	13	7 46 18.22	26 31 25.6	49.87
14	6 1 1.57	27 58 0.7	13.23	14	7 48 28.64	26 26 26.4	51.10
15	6 3 18.46	27 59 20.1	11.82	15	7 50 38.86	26 21 19.8	52.32
16	6 5 35.31	28 0 31.0	10.40	16	7 52 48.86	26 16 5.9	53.52
17	6 7 52.12	28 1 33.4	8.98	17	7 54 58.64	26 10 44.8	54.73
18	6 10 8.86	28 2 27.3	7.57	18	7 57 8.21	26 5 16.4	55.92
19	6 12 25.55	28 3 12.7	6.15	19	7 59 17.56	25 59 40.9	57.12
20	6 14 42.17	28 3 49.6	4.75	20	8 1 26.69	25 53 58.2	58.30
21	6 16 58.73	28 4 18.1	3.33	21	8 3 35.59	25 48 8.4	59.48
22	6 19 15.21	28 4 38.1	1.93	22	8 5 44.27	25 42 11.5	60.63
23	6 21 31.62	28 4 49.7	0.52	23	8 7 52.73	25 36 7.7	61.82
24	6 23 47.94	N.28 4 52.8		24	8 10 0.96	N.25 29 56.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 13.				SATURDAY 15.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	8 10 0.96	N. 25 29 56.8	62.97	0	9 48 7.12	N. 18 30 14.1	110.12
1	8 12 8.96	25 23 39.0	64.12	1	9 50 4.47	18 19 13.4	110.93
2	8 14 16.73	25 17 14.3	65.25	2	9 52 1.64	18 8 7.8	111.72
3	8 16 24.28	25 10 42.8	66.40	3	9 53 58.62	17 56 57.5	112.52
4	8 18 31.59	25 4 4.4	67.52	4	9 55 55.42	17 45 42.4	113.30
5	8 20 38.67	24 57 19.3	68.63	5	9 57 52.04	17 34 22.6	114.07
6	8 22 45.53	24 50 27.5	69.77	6	9 59 48.48	17 22 58.2	114.83
7	8 24 52.14	24 43 28.9	70.87	7	10 1 44.74	17 11 29.2	115.60
8	8 26 58.53	24 36 23.7	71.97	8	10 3 40.83	16 59 55.6	116.37
9	8 29 4.69	24 29 11.9	73.07	9	10 5 36.75	16 48 17.4	117.10
10	8 31 10.61	24 21 53.5	74.15	10	10 7 32.51	16 36 34.8	117.83
11	8 33 16.30	24 14 28.6	75.23	11	10 9 28.09	16 24 47.8	118.57
12	8 35 21.75	24 6 57.2	76.30	12	10 11 23.52	16 12 56.4	119.30
13	8 37 26.97	23 59 19.4	77.38	13	10 13 18.79	16 1 0.6	120.00
14	8 39 31.96	23 51 35.1	78.43	14	10 15 13.90	15 49 0.6	120.73
15	8 41 36.71	23 43 44.5	79.48	15	10 17 8.86	15 36 56.2	121.42
16	8 43 41.23	23 35 47.6	80.53	16	10 19 3.66	15 24 47.7	122.12
17	8 45 45.52	23 27 44.4	81.57	17	10 20 58.32	15 12 35.0	122.82
18	8 47 49.57	23 19 35.0	82.58	18	10 22 52.84	15 0 18.1	123.48
19	8 49 53.39	23 11 19.5	83.63	19	10 24 47.21	14 47 57.2	124.17
20	8 51 56.98	23 2 57.7	84.63	20	10 26 41.45	14 35 32.2	124.82
21	8 54 0.33	22 54 29.9	85.65	21	10 28 35.55	14 23 3.3	125.48
22	8 56 3.46	22 45 56.0	86.63	22	10 30 29.52	14 10 30.4	126.13
23	8 58 6.36	N. 22 37 16.2	87.65	23	10 32 23.36	N. 13 57 53.6	126.78
FRIDAY 14.				SUNDAY 16.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	9 0 9.02	N. 22 28 30.3	88.63	0	10 34 17.07	N. 13 45 12.9	127.42
1	9 2 11.46	22 19 38.5	89.60	1	10 36 10.67	13 32 28.4	128.03
2	9 4 13.67	22 10 40.9	90.58	2	10 38 4.14	13 19 40.2	128.67
3	9 6 15.65	22 1 37.4	91.55	3	10 39 57.50	13 6 48.2	129.28
4	9 8 17.40	21 52 28.1	92.50	4	10 41 50.75	12 53 52.5	129.88
5	9 10 18.93	21 43 13.1	93.45	5	10 43 43.89	12 40 53.2	130.47
6	9 12 20.24	21 33 52.4	94.40	6	10 45 36.92	12 27 50.4	131.08
7	9 14 21.32	21 24 26.0	95.33	7	10 47 29.86	12 14 43.9	131.65
8	9 16 22.18	21 14 54.0	96.27	8	10 49 22.69	12 1 34.0	132.23
9	9 18 22.83	21 5 16.4	97.18	9	10 51 15.43	11 48 20.6	132.80
10	9 20 23.25	20 55 33.3	98.10	10	10 53 8.08	11 35 3.8	133.37
11	9 22 23.45	20 45 44.7	99.00	11	10 55 0.64	11 21 43.6	133.92
12	9 24 23.44	20 35 50.7	99.90	12	10 56 53.11	11 8 20.1	134.47
13	9 26 23.21	20 25 51.3	100.80	13	10 58 45.50	10 54 53.3	135.00
14	9 28 22.77	20 15 46.5	101.68	14	11 0 37.82	10 41 23.3	135.53
15	9 30 22.13	20 5 36.4	102.55	15	11 2 30.06	10 27 50.1	136.05
16	9 32 21.27	19 55 21.1	103.43	16	11 4 22.23	10 14 13.8	136.58
17	9 34 20.20	19 45 0.5	104.28	17	11 6 14.34	10 0 34.3	137.08
18	9 36 18.93	19 34 34.8	105.15	18	11 8 6.38	9 46 51.8	137.57
19	9 38 17.46	19 24 3.9	106.00	19	11 9 58.37	9 33 6.4	138.08
20	9 40 15.78	19 13 27.9	106.83	20	11 11 50.30	9 19 17.9	138.55
21	9 42 13.91	19 2 46.9	107.67	21	11 13 42.18	9 5 26.6	139.03
22	9 44 11.84	18 52 0.9	108.48	22	11 15 34.02	8 51 32.4	139.50
23	9 46 9.58	18 41 10.0	109.32	23	11 17 25.81	8 37 35.4	139.95
24	9 48 7.12	N. 18 30 14.1		24	11 19 17.56	N. 8 23 35.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 17.				WEDNESDAY 19.			
0	h m s 11 19 17.56	N. 8 23 35.7	140.40	0	h m s 12 49 16.52	S. 3 25 37.6	151.77
1	11 21 9.28	8 9 33.3	140.37	1	12 51 11.49	3 40 48.2	151.75
2	11 23 0.96	7 55 28.1	141.28	2	12 53 6.65	3 55 58.7	151.73
3	11 24 52.62	7 41 20.4	141.72	3	12 55 1.98	4 11 9.1	151.70
4	11 26 44.25	7 27 10.1	142.13	4	12 56 57.49	4 26 19.3	151.67
5	11 28 35.87	7 12 57.3	142.55	5	12 58 53.20	4 41 29.3	151.63
6	11 30 27.47	6 58 42.0	142.95	6	13 0 49.10	4 56 39.0	151.53
7	11 32 19.06	6 44 24.3	143.35	7	13 2 45.21	5 11 48.3	151.47
8	11 34 10.64	6 30 4.2	143.73	8	13 4 41.51	5 26 57.1	151.38
9	11 36 2.22	6 15 41.8	144.12	9	13 6 38.03	5 42 5.4	151.27
10	11 37 53.79	6 1 17.1	144.48	10	13 8 34.76	5 57 13.0	151.17
11	11 39 45.38	5 46 50.2	144.85	11	13 10 31.71	6 12 20.0	151.03
12	11 41 36.97	5 32 21.1	145.20	12	13 12 28.88	6 27 26.3	150.90
13	11 43 28.57	5 17 49.9	145.55	13	13 14 26.28	6 42 31.7	150.73
14	11 45 20.20	5 3 16.6	145.88	14	13 16 23.91	6 57 36.2	150.60
15	11 47 11.84	4 48 41.3	146.22	15	13 18 21.77	7 12 39.8	150.42
16	11 49 3.51	4 34 4.0	146.53	16	13 20 19.88	7 27 42.3	150.22
17	11 50 55.21	4 19 24.8	146.85	17	13 22 18.23	7 42 43.6	150.03
18	11 52 46.94	4 4 43.7	147.15	18	13 24 16.83	7 57 43.8	149.82
19	11 54 38.71	3 50 0.8	147.43	19	13 26 15.69	8 12 42.7	149.60
20	11 56 30.53	3 35 16.2	147.73	20	13 28 14.81	8 27 40.3	149.33
21	11 58 22.39	3 20 29.8	148.00	21	13 30 14.19	8 42 36.4	149.10
22	12 0 14.30	3 5 41.8	148.27	22	13 32 13.84	8 57 31.0	148.83
23	12 2 6.27	N. 2 50 52.2	148.52	23	13 34 13.76	S. 9 12 24.0	148.55
TUESDAY 18.				THURSDAY 20.			
0	12 3 58.30	N. 2 36 1.1	148.77	0	13 36 13.96	S. 9 27 15.3	148.27
1	12 5 50.39	2 21 8.5	149.00	1	13 38 14.44	9 42 4.9	147.97
2	12 7 42.56	2 6 14.5	149.23	2	13 40 15.20	9 56 52.7	147.63
3	12 9 34.80	1 51 19.1	149.45	3	13 42 16.26	10 11 38.5	147.32
4	12 11 27.11	1 36 22.4	149.67	4	13 44 17.61	10 26 22.4	146.95
5	12 13 19.51	1 21 24.4	149.87	5	13 46 19.26	10 41 4.1	146.60
6	12 15 11.99	1 6 25.2	150.05	6	13 48 21.21	10 55 43.7	146.22
7	12 17 4.57	0 51 24.9	150.23	7	13 50 23.47	11 10 21.0	145.83
8	12 18 57.24	0 36 23.5	150.40	8	13 52 26.04	11 24 56.0	145.43
9	12 20 50.00	0 21 21.1	150.57	9	13 54 28.92	11 39 28.6	145.00
10	12 22 42.88	N. 0 6 17.7	150.72	10	13 56 32.13	11 53 58.6	144.58
11	12 24 35.86	S. 0 8 46.6	150.87	11	13 58 35.67	12 8 26.1	144.12
12	12 26 28.95	0 23 51.8	150.98	12	14 0 39.53	12 22 50.8	143.65
13	12 28 22.16	0 38 57.7	151.12	13	14 2 43.72	12 37 12.7	143.18
14	12 30 15.49	0 54 4.4	151.23	14	14 4 48.25	12 51 31.8	142.68
15	12 32 8.95	1 9 11.8	151.32	15	14 6 53.12	13 5 47.9	142.18
16	12 34 2.54	1 24 19.7	151.42	16	14 8 58.34	13 20 1.0	141.63
17	12 35 56.27	1 39 28.2	151.50	17	14 11 3.91	13 34 10.9	141.10
18	12 37 50.13	1 54 37.2	151.57	18	14 13 9.82	13 48 17.5	140.55
19	12 39 44.14	2 9 46.6	151.62	19	14 15 16.09	14 2 20.8	139.98
20	12 41 38.30	2 24 56.3	151.68	20	14 17 22.73	14 16 20.7	139.40
21	12 43 32.61	2 40 6.4	151.72	21	14 19 29.73	14 30 17.1	138.80
22	12 45 27.09	2 55 16.7	151.73	22	14 21 37.09	14 44 9.9	138.17
23	12 47 21.72	3 10 27.1	151.75	23	14 23 44.83	14 57 58.9	137.55
24	12 49 16.52	S. 3 25 37.6		24	14 25 52.94	S. 15 11 44.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
FRIDAY 21.				SUNDAY 23.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	14 25 52.94	S. 15 11 44.2	136.90	0	16 16 27.85	S. 24 24 23.3	85.70
1	14 28 1.43	15 25 25.6	136.23	1	16 18 56.48	24 32 57.5	84.22
2	14 30 10.30	15 39 3.0	135.53	2	16 21 25.50	24 41 22.8	82.72
3	14 32 19.55	15 52 36.2	134.85	3	16 23 54.93	24 49 39.1	81.20
4	14 34 29.20	16 6 5.3	134.13	4	16 26 24.75	24 57 46.3	79.68
5	14 36 39.23	16 19 30.1	133.40	5	16 28 54.96	25 5 44.4	78.12
6	14 38 49.66	16 32 50.5	132.65	6	16 31 25.56	25 13 33.1	76.57
7	14 41 0.48	16 46 6.4	131.90	7	16 33 56.53	25 21 12.5	74.98
8	14 43 11.71	16 59 17.8	131.10	8	16 36 27.88	25 28 42.4	73.38
9	14 45 23.34	17 12 24.4	130.30	9	16 38 59.61	25 36 2.7	71.78
10	14 47 35.37	17 25 26.2	129.50	10	16 41 31.69	25 43 13.4	70.17
11	14 49 47.81	17 38 23.2	128.65	11	16 44 4.14	25 50 14.4	68.53
12	14 52 0.66	17 51 15.1	127.80	12	16 46 36.94	25 57 5.6	66.88
13	14 54 13.92	18 4 1.9	126.95	13	16 49 10.09	26 3 46.9	65.20
14	14 56 27.60	18 16 43.6	126.05	14	16 51 43.59	26 10 18.1	63.55
15	14 58 41.70	18 29 19.9	125.15	15	16 54 17.42	26 16 39.4	61.83
16	15 0 56.21	18 41 50.8	124.23	16	16 56 51.58	26 22 50.4	60.15
17	15 3 11.15	18 54 16.2	123.30	17	16 59 26.06	26 28 51.3	58.42
18	15 5 26.51	19 6 36.0	122.35	18	17 2 0.86	26 34 41.8	56.70
19	15 7 42.30	19 18 50.1	121.38	19	17 4 35.97	26 40 22.0	54.97
20	15 9 58.51	19 30 58.4	120.38	20	17 7 11.39	26 45 51.8	53.20
21	15 12 15.15	19 43 0.7	119.40	21	17 9 47.10	26 51 11.0	51.43
22	15 14 32.22	19 54 57.1	118.35	22	17 12 23.09	26 56 19.6	49.67
23	15 16 49.73	S. 20 6 47.2	117.33	23	17 14 59.37	S. 27 1 17.6	47.88
SATURDAY 22.				MONDAY 24.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	15 19 7.66	S. 20 18 31.2	116.27	0	17 17 35.92	S. 27 6 4.9	46.08
1	15 21 26.03	20 30 8.8	115.20	1	17 20 12.74	27 10 41.4	44.27
2	15 23 44.84	20 41 40.0	114.12	2	17 22 49.82	27 15 7.0	42.47
3	15 26 4.08	20 53 4.7	113.00	3	17 25 27.14	27 19 21.8	40.63
4	15 28 23.75	21 4 22.7	111.87	4	17 28 4.70	27 23 25.6	38.78
5	15 30 43.86	21 15 33.9	110.73	5	17 30 42.50	27 27 18.3	36.95
6	15 33 4.41	21 26 38.3	109.55	6	17 33 20.51	27 31 0.0	35.10
7	15 35 25.40	21 37 35.6	108.38	7	17 35 58.74	27 34 30.6	33.23
8	15 37 46.81	21 48 25.9	107.20	8	17 38 37.17	27 37 50.0	31.37
9	15 40 8.66	21 59 9.1	105.97	9	17 41 15.80	27 40 58.2	29.50
10	15 42 30.95	22 9 44.9	104.75	10	17 43 54.60	27 43 55.2	27.60
11	15 44 53.67	22 20 13.4	103.48	11	17 46 33.59	27 46 40.8	25.72
12	15 47 16.82	22 30 34.3	102.22	12	17 49 12.74	27 49 15.1	23.82
13	15 49 40.40	22 40 47.6	100.95	13	17 51 52.05	27 51 38.0	21.92
14	15 52 4.42	22 50 53.3	99.63	14	17 54 31.50	27 53 49.5	20.00
15	15 54 28.86	23 0 51.1	98.32	15	17 57 11.08	27 55 49.5	18.08
16	15 56 53.73	23 10 41.0	96.98	16	17 59 50.79	27 57 38.0	16.17
17	15 59 19.03	23 20 22.9	95.62	17	18 2 30.62	27 59 15.0	14.25
18	16 1 44.75	23 29 56.6	94.27	18	18 5 10.56	28 0 40.5	12.33
19	16 4 10.89	23 39 22.2	92.87	19	18 7 50.58	28 1 54.5	10.38
20	16 6 37.46	23 48 39.4	91.48	20	18 10 30.69	28 2 56.8	8.47
21	16 9 4.44	23 57 48.3	90.05	21	18 13 10.88	28 3 47.6	6.52
22	16 11 31.83	24 6 48.6	88.62	22	18 15 51.13	28 4 26.7	4.58
23	16 13 59.64	24 15 40.3	87.17	23	18 18 31.43	28 4 54.2	2.65
24	16 16 27.85	S. 24 24 23.3		24	18 21 11.78	S. 28 5 10.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 25.				THURSDAY 27.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	18 21 11.78	S. 28 5 10.1	0.70	0	20 27 7.41	S. 24 36 7.5	86.20
1	18 23 52.16	28 5 14.3	1.23	1	20 29 38.54	24 27 28.5	88.97
2	18 26 32.56	28 5 6.9	3.18	2	20 32 9.31	24 18 40.1	89.60
3	18 29 12.97	28 4 47.8	5.13	3	20 34 39.72	24 9 42.5	91.71
4	18 31 53.38	28 4 17.0	7.07	4	20 37 9.76	24 0 35.7	92.43
5	18 34 33.78	28 3 34.6	9.02	5	20 39 39.45	23 51 19.9	94.71
6	18 37 14.17	28 2 40.5	10.95	6	20 42 8.76	23 41 55.1	95.45
7	18 39 54.52	28 1 34.8	12.88	7	20 44 37.70	23 32 21.3	97.00
8	18 42 34.83	28 0 17.5	14.83	8	20 47 6.27	23 22 38.8	98.43
9	18 45 15.09	27 58 48.5	16.77	9	20 49 34.46	23 12 47.6	99.77
10	18 47 55.29	27 57 7.9	18.70	10	20 52 2.28	23 2 47.8	101.00
11	18 50 35.41	27 55 15.7	20.63	11	20 54 29.72	22 52 39.4	102.90
12	18 53 15.46	27 53 11.9	22.57	12	20 56 56.77	22 42 22.6	104.71
13	18 55 55.41	27 50 56.5	24.48	13	20 59 23.44	22 31 57.5	105.77
14	18 58 35.26	27 48 29.6	26.40	14	21 1 49.73	22 21 24.1	106.72
15	19 1 15.00	27 45 51.2	28.32	15	21 4 15.63	22 10 42.6	108.23
16	19 3 54.61	27 43 1.3	30.22	16	21 6 41.15	21 59 53.1	109.78
17	19 6 34.10	27 40 0.0	32.13	17	21 9 6.28	21 48 55.6	110.78
18	19 9 13.44	27 36 47.2	34.02	18	21 11 31.02	21 37 50.3	112.71
19	19 11 52.63	27 33 23.1	35.92	19	21 13 55.38	21 26 37.2	113.43
20	19 14 31.67	27 29 47.6	37.80	20	21 16 19.35	21 15 16.5	114.72
21	19 17 10.53	27 26 0.8	39.67	21	21 18 42.93	21 3 48.2	115.93
22	19 19 49.22	27 22 2.8	41.55	22	21 21 6.13	20 52 12.5	117.17
23	19 22 27.73	S. 27 17 53.5	43.40	23	21 23 28.94	S. 20 40 29.5	118.38
WEDNESDAY 26.				FRIDAY 28.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	19 25 6.04	S. 27 13 33.1	45.25	0	21 25 51.36	S. 20 28 39.2	119.57
1	19 27 44.15	27 9 1.6	47.10	1	21 28 13.40	20 16 41.8	120.75
2	19 30 22.04	27 4 19.0	48.93	2	21 30 35.05	20 4 37.3	121.90
3	19 32 59.72	26 59 25.4	50.77	3	21 32 56.32	19 52 25.9	123.03
4	19 35 37.16	26 54 20.8	52.58	4	21 35 17.21	19 40 7.7	124.17
5	19 38 14.37	26 49 5.3	54.38	5	21 37 37.71	19 27 42.7	125.27
6	19 40 51.34	26 43 39.0	56.18	6	21 39 57.84	19 15 11.1	126.37
7	19 43 28.05	26 38 1.9	57.97	7	21 42 17.59	19 2 32.9	127.43
8	19 46 4.51	26 32 14.1	59.75	8	21 44 36.96	18 49 48.3	128.48
9	19 48 40.70	26 26 15.6	61.50	9	21 46 55.95	18 36 57.4	129.53
10	19 51 16.62	26 20 6.6	63.27	10	21 49 14.58	18 24 0.2	130.55
11	19 53 52.26	26 13 47.0	65.02	11	21 51 32.83	18 10 56.9	131.55
12	19 56 27.61	26 7 16.9	66.75	12	21 53 50.71	17 57 47.6	132.53
13	19 59 2.67	26 0 36.4	68.47	13	21 56 8.23	17 44 32.4	133.52
14	20 1 37.43	25 53 45.6	70.17	14	21 58 25.38	17 31 11.3	134.47
15	20 4 11.89	25 46 44.6	71.87	15	22 0 42.17	17 17 44.5	135.42
16	20 6 46.03	25 39 33.4	73.55	16	22 2 58.61	17 4 12.0	136.32
17	20 9 19.86	25 32 12.1	75.20	17	22 5 14.68	16 50 34.1	137.23
18	20 11 53.37	25 24 40.9	76.88	18	22 7 30.41	16 36 50.7	138.13
19	20 14 26.56	25 16 59.6	78.50	19	22 9 45.79	16 23 1.9	139.00
20	20 16 59.41	25 9 8.6	80.13	20	22 12 0.82	16 9 7.9	139.81
21	20 19 31.92	25 1 7.8	81.77	21	22 14 15.51	15 55 8.8	140.71
22	20 22 4.10	24 52 57.2	83.35	22	22 16 29.86	15 41 4.6	141.51
23	20 24 35.93	24 44 37.1	84.93	23	22 18 43.87	15 26 55.5	142.33
24	20 27 7.41	S. 24 36 7.5		24	22 20 57.55	S. 15 12 41.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
SATURDAY 29.				SUNDAY 30.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	22 20 57.55	S. 15 12 41.6	143.12	0	23 12 56.23	S. 9 11 5.3	157.30
1	22 23 10.90	14 58 22.9	143.88	1	23 15 2.91	8 55 21.5	157.70
2	22 25 23.93	14 43 59.6	144.65	2	23 17 9.36	8 39 35.3	158.08
3	22 27 36.63	14 29 31.7	145.40	3	23 19 15.60	8 23 46.8	158.43
4	22 29 49.02	14 14 59.3	146.12	4	23 21 21.63	8 7 56.2	158.80
5	22 32 1.09	14 0 22.6	146.83	5	23 23 27.45	7 52 3.4	159.13
6	22 34 12.85	13 45 41.6	147.52	6	23 25 33.06	7 36 8.6	159.45
7	22 36 24.31	13 30 56.5	148.20	7	23 27 38.48	7 20 11.9	159.77
8	22 38 35.46	13 16 7.3	148.85	8	23 29 43.71	7 4 13.3	160.05
9	22 40 46.32	13 1 14.2	149.52	9	23 31 48.75	6 48 13.0	160.33
10	22 42 56.88	12 46 17.1	150.13	10	23 33 53.60	6 32 11.0	160.58
11	22 45 7.15	12 31 16.3	150.75	11	23 35 58.28	6 16 7.5	160.83
12	22 47 17.13	12 16 11.8	151.35	12	23 38 2.78	6 0 2.5	161.07
13	22 49 26.83	12 1 3.7	151.92	13	23 40 7.11	5 43 56.1	161.28
14	22 51 36.25	11 45 52.2	152.50	14	23 42 11.28	5 27 48.4	161.48
15	22 53 45.41	11 30 37.2	153.03	15	23 44 15.30	5 11 39.5	161.67
16	22 55 54.29	11 15 19.0	153.58	16	23 46 19.16	4 55 29.5	161.85
17	22 58 2.91	10 59 57.5	154.08	17	23 48 22.87	4 39 18.4	162.02
18	23 0 11.27	10 44 33.0	154.60	18	23 50 26.44	4 23 6.3	162.15
19	23 2 19.37	10 29 5.4	155.08	19	23 52 29.86	4 6 53.4	162.28
20	23 4 27.23	10 13 34.9	155.57	20	23 54 33.16	3 50 39.7	162.42
21	23 6 34.83	9 58 1.5	156.02	21	23 56 36.32	3 34 25.2	162.50
22	23 8 42.20	9 42 25.4	156.47	22	23 58 39.37	3 18 10.2	162.60
23	23 10 49.33	9 26 46.6	156.88	23	0 0 42.29	3 1 54.6	162.68
24	23 12 56.23	S. 9 11 5.3		24	0 2 45.10	S. 2 45 38.5	

PHASES OF THE MOON.

● New Moon	- - - - -	d h m	4 19 20.2
☾ First Quarter	- - - - -	d h m	12 11 13.3
○ Full Moon	- - - - -	d h m	20 8 39.4
☾ Last Quarter	- - - - -	d h m	27 6 57.0

☾ Perigee	- - - - -	d h	1 7
☾ Apogee	- - - - -	d h	13 4
☾ Perigee	- - - - -	d h	26 20

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.		Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .
			° ' "		° ' "		° ' "		° ' "
1	Saturn	W.	94 58 35	2204	96 46 56	2204	98 35 18	2202	100 23 42
	Antares	W.	73 6 14	2213	74 54 22	2211	76 42 33	2210	78 30 45
	SUN	E.	50 50 41	2520	49 9 56	2519	47 29 9	2519	45 48 22
2	Saturn	W.	109 25 40	2205	111 14 0	2208	113 2 16	2211	114 50 28
	Antares	W.	87 31 46	2213	89 19 54	2214	91 8 0	2217	92 56 2
	SUN	E.	37 24 24	2522	35 43 41	2525	34 3 2	2527	32 22 26
6	Aldebaran	E.	36 10 16	2626	34 31 56	2653	32 54 13	2683	31 17 10
	Pollux	E.	79 20 21	2479	77 38 38	2493	75 57 15	2507	74 16 11
	Jupiter	E.	96 23 17	2492	94 41 53	2507	93 0 49	2521	91 20 5
	Mars	E.	97 46 56	2546	96 6 46	2561	94 26 58	2576	92 47 30
7	SUN	W.	27 37 22	2935	29 8 57	2950	30 40 13	2966	32 11 8
	Pollux	E.	65 55 59	2596	64 16 59	2611	62 38 19	2627	61 0 0
	Jupiter	E.	83 1 30	2610	81 22 49	2626	79 44 29	2641	78 6 30
	Mars	E.	84 35 19	2668	82 57 56	2684	81 20 54	2699	79 44 13
8	SUN	W.	39 40 47	3062	41 9 43	3078	42 38 20	3094	44 6 37
	Pollux	E.	52 53 31	2717	51 17 14	2732	49 41 17	2747	48 5 40
	Jupiter	E.	70 1 47	2734	68 25 52	2750	66 50 18	2765	65 15 4
	Mars	E.	71 46 5	2795	70 11 30	2810	68 37 15	2825	67 3 20
	Regulus	E.	89 29 15	2727	87 53 11	2742	86 17 27	2757	84 42 3
9	SUN	W.	51 23 26	3185	52 49 53	3199	54 16 3	3213	55 41 57
	Pollux	E.	40 12 19	2834	38 38 35	2847	37 5 8	2861	35 31 59
	Jupiter	E.	57 23 46	2854	55 50 28	2868	54 17 28	2882	52 44 46
	Mars	E.	59 18 39	2916	57 46 40	2930	56 14 59	2944	54 43 36
	Regulus	E.	76 49 43	2842	75 16 10	2856	73 42 55	2870	72 9 58
10	SUN	W.	62 47 26	3292	64 11 47	3303	65 35 55	3315	66 59 49
	Aldebaran	W.	18 18 47	3439	19 40 20	3379	21 3 1	3332	22 26 35
	Pollux	E.	27 50 18	2936	26 18 45	2948	24 47 27	2960	23 16 24
	Jupiter	E.	45 5 35	2962	43 34 34	2975	42 3 50	2987	40 33 21
	Mars	E.	47 10 51	3022	45 41 6	3034	44 11 35	3046	42 42 19
	Regulus	E.	64 29 12	2944	62 57 49	2956	61 26 41	2967	59 55 47
11	SUN	W.	73 56 20	3375	75 19 5	3383	76 41 41	3391	78 4 8
	Aldebaran	W.	29 32 21	3204	30 58 25	3195	32 24 40	3188	33 51 4
	Jupiter	E.	33 4 39	3058	31 35 38	3070	30 6 52	3082	28 38 20
	Mars	E.	35 19 21	3109	33 51 22	3119	32 23 35	3128	30 55 59
	Regulus	E.	52 24 25	3026	50 54 44	3034	49 25 13	3043	47 55 53
12	SUN	W.	84 54 32	3427	86 16 18	3431	87 37 59	3435	88 59 36
	Aldebaran	W.	41 4 26	3166	42 31 16	3164	43 58 8	3161	45 25 4
	Jupiter	E.	21 19 40	3167	19 52 52	3187	18 26 27	3210	17 0 30
	Regulus	E.	40 31 27	3083	39 2 57	3089	37 34 34	3096	36 6 20
	Spica η	E.	94 29 7	3060	93 0 8	3065	91 31 15	3068	90 2 26
	Saturn	E.	117 46 43	3043	116 17 23	3047	114 48 8	3049	113 18 56
13	SUN	W.	95 46 59	3446	97 8 23	3446	98 29 47	3446	99 51 12
	Aldebaran	W.	52 40 19	3148	54 7 30	3146	55 34 44	3143	57 2 2
	Regulus	E.	28 46 46	3128	27 19 10	3134	25 51 42	3140	24 24 21
	Spica η	E.	82 39 4	3078	81 10 28	3078	79 41 52	3078	78 13 15
	Saturn	E.	105 53 36	3058	104 24 35	3059	102 55 35	3058	101 26 34

MEAN TIME.

LUNAR DISTANCES.

Star's Name and Position.	Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
	° ' "		° ' "		° ' "		° ' "	
turn W.	102 12 7	2202	104 0 32	2202	105 48 56	2203	107 37 19	2204
tares W.	80 18 58	2210	82 7 11	2210	83 55 23	2210	85 43 35	2211
N E.	44 7 33	2517	42 26 44	2518	40 45 56	2519	39 5 9	2520
turn W.	116 38 36	2217	118 26 39	2221	120 14 36	2225	122 2 26	2229
tares W.	94 44 0	2223	96 31 54	2226	98 19 42	2230	100 7 25	2234
N E.	30 41 55	2534	29 1 29	2539	27 21 10	2543	25 40 57	2548
debaran E.	29 40 50	2750	28 5 17	2791	26 30 37	2835	24 56 55	2884
lux E.	72 35 28	2537	70 55 6	2551	69 15 3	2566	67 35 21	2580
piter E.	89 39 41	2550	87 59 37	2565	86 19 54	2580	84 40 32	2595
ars E.	91 8 22	2606	89 29 35	2621	87 51 8	2637	86 13 3	2652
N W.	33 41 44	2998	35 11 59	3014	36 41 55	3030	38 11 31	3046
lux E.	59 22 1	2657	57 44 23	2672	56 7 5	2687	54 30 8	2702
piter E.	76 28 52	2672	74 51 35	2687	73 14 38	2703	71 38 2	2719
ars E.	78 7 53	2731	76 31 54	2747	74 56 17	2763	73 21 1	2779
N W.	45 34 36	3124	47 2 16	3140	48 29 37	3155	49 56 40	3169
lux E.	46 30 22	2776	44 55 23	2791	43 20 43	2805	41 46 22	2819
piter E.	63 40 9	2795	62 5 34	2810	60 31 19	2825	58 57 23	2839
ars E.	65 29 45	2856	63 56 30	2871	62 23 34	2886	60 50 57	2901
gulus E.	83 6 58	2785	81 32 11	2800	79 57 43	2815	78 23 34	2828
N W.	57 7 34	3241	58 32 55	3254	59 58 0	3267	61 22 50	3279
lux E.	33 59 6	2887	32 26 30	2899	30 54 10	2912	29 22 6	2924
piter E.	51 12 22	2909	49 40 15	2923	48 8 25	2936	46 36 52	2949
ars E.	53 12 30	2971	51 41 41	2984	50 11 8	2997	48 40 52	3010
gulus E.	70 37 17	2895	69 4 52	2908	67 32 43	2920	66 0 50	2932
N W.	68 23 30	3336	69 47 0	3347	71 10 17	3356	72 33 24	3365
debaran W.	23 50 51	3269	25 15 39	3246	26 40 54	3228	28 6 30	3215
lux E.	21 45 34	2982	20 14 59	2993	18 44 37	3005	17 14 30	3017
piter E.	39 3 7	3011	37 33 8	3023	36 3 24	3035	34 33 54	3047
ars E.	41 13 17	3069	39 44 29	3079	38 15 54	3089	36 47 31	3100
gulus E.	58 25 5	2988	56 54 37	2998	55 24 21	3007	53 54 17	3017
N W.	79 26 27	3405	80 48 38	3411	82 10 42	3416	83 32 40	3422
debaran W.	35 17 35	3177	36 44 12	3173	38 10 54	3170	39 37 39	3168
piter E.	27 10 3	3107	25 42 2	3120	24 14 17	3134	22 46 49	3150
ars E.	29 28 33	3145	28 1 18	3153	26 34 13	3162	25 7 19	3171
gulus E.	46 26 42	3057	44 57 40	3065	43 28 48	3072	42 0 4	3078
N W.	90 21 9	3441	91 42 39	3443	93 4 7	3445	94 25 33	3445
debaran W.	46 52 2	3157	48 19 2	3155	49 46 5	3153	51 13 11	3151
piter E.	15 35 8	3276	14 10 28	3323	- - -	- - -	- - -	- - -
gulus E.	34 38 13	3107	33 10 12	3112	31 42 17	3118	30 14 29	3122
ica π E.	88 33 41	3073	87 4 58	3075	85 36 18	3077	84 7 40	3078
turn E.	111 49 48	3054	110 20 42	3056	108 51 39	3057	107 22 37	3058
N W.	101 12 38	3443	102 34 6	3441	103 55 36	3439	105 17 9	3435
debaran W.	58 29 24	3136	59 56 50	3132	61 24 21	3128	62 51 57	3124
gulus E.	22 57 9	3156	21 30 7	3167	20 3 18	3179	18 36 44	3193
ica π E.	76 44 38	3076	75 15 59	3074	73 47 18	3072	72 18 34	3069
turn E.	99 57 31	3055	98 28 26	3053	96 59 19	3051	95 30 9	3048

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	P. L. of diff.
14	SUN W.	106° 38' 46"	3431	108° 0' 27"	3428	109° 22' 12"	3423	110° 44' 3"	3417
	Aldebaran W.	64 19 38	3119	65 47 25	3114	67 15 18	3108	68 43 18	3102
	Pollux W.	20 0 50	3071	21 29 35	3066	22 58 26	3061	24 27 24	3055
	Spica π E.	70 49 46	3066	69 20 55	3063	67 52 0	3059	66 23 0	3053
	Saturn E.	94 0 55	3044	92 31 37	3041	91 2 15	3036	89 32 47	3032
15	SUN W.	117 34 54	3386	118 57 27	3378	120 20 9	3369	121 43 1	3361
	Aldebaran W.	76 5 10	3069	77 33 58	3061	79 2 56	3053	80 32 3	3044
	Pollux W.	31 54 4	3023	33 23 48	3015	34 53 42	3007	36 23 46	2999
	Jupiter W.	15 13 8	3202	16 39 15	3168	18 6 3	3138	19 33 26	3114
	Spica π E.	58 56 24	3025	57 26 42	3018	55 56 52	3011	54 26 53	3004
16	Saturn E.	82 3 53	3002	80 33 43	2996	79 3 25	2988	77 32 57	2980
	Aldebaran W.	88 0 22	2999	89 30 36	2989	91 1 3	2978	92 31 43	2969
	Pollux W.	43 56 49	2953	45 28 1	2943	46 59 26	2933	48 31 3	2922
	Jupiter W.	26 56 49	3022	28 26 34	3007	29 56 38	2993	31 27 0	2978
	Mars W.	23 11 45	3081	24 40 18	3067	26 9 8	3055	27 38 13	3043
17	Spica π E.	46 54 30	2961	45 23 28	2952	43 52 15	2943	42 20 50	2933
	Saturn E.	69 58 3	2937	68 26 31	2927	66 54 46	2917	65 22 49	2906
	Antares E.	92 45 6	2952	91 13 53	2941	89 42 26	2931	88 10 47	2921
	Pollux W.	56 12 37	2866	57 45 40	2855	59 18 57	2842	60 52 30	2830
	Jupiter W.	39 3 15	2909	40 35 22	2895	42 7 47	2882	43 40 29	2869
18	Mars W.	35 7 29	2980	36 38 7	2968	38 9 0	2954	39 40 10	2942
	Regulus W.	20 1 59	2962	21 32 59	2938	23 4 29	2916	24 36 28	2895
	Spica π E.	34 40 38	2882	33 7 56	2873	31 35 2	2863	30 1 55	2852
	Saturn E.	57 39 42	2853	56 6 23	2842	54 32 50	2831	52 59 2	2819
	Antares E.	80 29 8	2865	78 56 4	2854	77 22 46	2842	75 49 13	2830
19	Pollux W.	68 44 14	2767	70 19 25	2755	71 54 52	2742	73 30 36	2730
	Jupiter W.	51 28 17	2802	53 2 43	2789	54 37 26	2775	56 12 27	2761
	Mars W.	47 20 2	2877	48 52 51	2864	50 25 56	2851	51 59 18	2838
	Regulus W.	32 22 29	2807	33 56 48	2791	35 31 28	2776	37 6 28	2760
	Saturn E.	45 6 17	2761	43 30 58	2750	41 55 25	2738	40 19 36	2728
20	Antares E.	67 57 27	2768	66 22 17	2755	64 46 50	2742	63 11 6	2730
	Pollux W.	81 33 28	2666	83 10 54	2654	84 48 36	2641	86 26 36	2629
	Jupiter W.	64 11 54	2696	65 48 39	2683	67 25 42	2670	69 3 2	2657
	Mars W.	59 50 19	2773	61 25 22	2760	63 0 42	2748	64 36 18	2735
	Regulus W.	45 6 22	2688	46 43 18	2675	48 20 32	2661	49 58 4	2647
21	Saturn E.	32 16 58	2673	30 39 45	2667	29 2 21	2659	27 24 46	2651
	Antares E.	55 8 16	2666	53 30 51	2654	51 53 10	2642	50 15 12	2629
	Jupiter W.	77 13 54	2597	78 52 53	2585	80 32 9	2573	82 11 41	2562
	Mars W.	72 38 26	2675	74 15 40	2663	75 53 10	2652	77 30 55	2640
	Regulus W.	58 10 15	2583	59 49 33	2572	61 29 7	2560	63 8 57	2548
22	Antares E.	42 1 14	2570	40 21 38	2558	38 41 46	2547	37 1 38	2537
	α Aquilæ E.	92 59 33	3413	91 37 31	3400	90 15 15	3388	88 52 45	3378
	Jupiter W.	90 33 4	2510	92 14 4	2500	93 55 18	2490	95 36 45	2481
23	Mars W.	85 43 24	2588	87 22 36	2577	89 2 2	2567	90 41 42	2558
	Regulus W.	71 32 7	2493	73 13 30	2483	74 55 7	2474	76 36 57	2464
	Spica π W.	17 34 5	2539	19 14 24	2519	20 55 11	2502	22 36 21	2488

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
		^o ⁱ ⁱⁱ		^o ⁱ ⁱⁱ		^o ⁱ ⁱⁱ		^o ⁱ ⁱⁱ	
14	SUN W.	112 6 0	3413	113 28 2	3406	114 50 12	3400	116 12 29	3393
	Aldebaran W.	70 11 25	3096	71 39 39	3090	73 8 1	3083	74 36 31	3076
	Pollux W.	25 56 29	3049	27 25 41	3043	28 55 0	3036	30 24 28	3030
	Spica π E.	64 53 53	3049	63 24 41	3044	61 55 23	3038	60 25 57	3032
	Saturn E.	88 3 14	3027	86 33 35	3021	85 3 48	3015	83 33 54	3009
15	SUN W.	123 6 2	3352	124 29 14	3343	125 52 36	3332	127 16 10	3322
	Aldebaran W.	82 1 21	3035	83 30 50	3027	85 0 29	3018	86 30 19	3008
	Pollux W.	37 54 0	2990	39 24 25	2981	40 55 1	2972	42 25 49	2962
	Jupiter W.	21 1 18	3093	22 29 36	3073	23 58 19	3055	25 27 24	3038
	Spica π E.	52 56 45	2996	51 26 27	2988	49 55 59	2979	48 25 20	2970
	Saturn E.	76 2 19	2972	74 31 31	2964	73 0 33	2955	71 29 24	2946
16	Aldebaran W.	94 2 35	2958	95 33 40	2947	97 4 59	2933	98 36 33	2918
	Pollux W.	50 2 54	2912	51 34 58	2900	53 7 17	2889	54 39 50	2878
	Jupiter W.	32 57 40	2964	34 28 38	2950	35 59 53	2937	37 31 25	2923
	Mars W.	29 7 33	3030	30 37 9	3017	32 7 0	3005	33 37 7	2993
	Spica π E.	40 49 13	2923	39 17 23	2913	37 45 21	2903	36 13 6	2893
	Saturn E.	63 50 38	2896	62 18 14	2886	60 45 37	2875	59 12 46	2865
	Antares E.	86 38 55	2910	85 6 49	2900	83 34 30	2889	82 1 57	2877
17	Pollux W.	62 26 19	2818	64 0 23	2805	65 34 44	2793	67 9 21	2781
	Jupiter W.	45 13 28	2856	46 46 44	2842	48 20 18	2828	49 54 9	2815
	Mars W.	41 11 36	2929	42 43 18	2916	44 15 16	2903	45 47 31	2890
	Regulus W.	26 8 53	2876	27 41 43	2858	29 14 56	2841	30 48 31	2823
	Spica π E.	28 28 35	2843	26 55 3	2834	25 21 19	2825	23 47 23	2816
	Saturn E.	51 24 59	2808	49 50 41	2796	48 16 8	2785	46 41 20	2773
	Antares E.	74 15 24	2818	72 41 19	2805	71 6 58	2793	69 32 21	2780
18	Pollux W.	75 6 36	2717	76 42 54	2704	78 19 28	2691	79 56 20	2679
	Jupiter W.	57 47 46	2748	59 23 22	2735	60 59 15	2722	62 35 26	2709
	Mars W.	53 32 56	2825	55 6 52	2812	56 41 4	2799	58 15 33	2786
	Regulus W.	38 41 48	2746	40 17 27	2731	41 53 26	2716	43 29 44	2701
	Saturn E.	38 43 33	2717	37 7 16	2706	35 30 44	2696	33 53 58	2685
	Antares E.	61 35 6	2717	59 58 49	2704	58 22 15	2692	56 45 24	2679
19	Pollux W.	88 4 52	2616	89 43 25	2604	91 22 14	2591	93 1 21	2579
	Jupiter W.	70 40 39	2645	72 18 33	2632	73 56 44	2621	75 35 11	2609
	Mars W.	66 12 11	2723	67 48 20	2711	69 24 46	2699	71 1 28	2687
	Regulus W.	51 35 55	2635	53 14 3	2621	54 52 30	2608	56 31 14	2596
	Saturn E.	25 47 0	2644	24 9 5	2640	22 31 4	2637	20 52 59	2636
	Antares E.	48 36 57	2618	46 58 26	2605	45 19 38	2593	43 40 34	2582
20	Jupiter W.	83 51 28	2551	85 31 30	2540	87 11 47	2530	89 52 18	2520
	Mars W.	79 8 56	2629	80 47 11	2618	82 25 41	2607	84 5 25	2597
	Regulus W.	64 49 4	2537	66 29 26	2525	68 10 5	2513	70 0 59	2504
	Antares E.	35 21 16	2526	33 40 39	2516	31 59 40	2505		
	α Aquilæ E.	87 30 4	3369	86 7 12	3362	84 44 1			
21	Jupiter W.	97 18 25	2472	99 0 17	2463	100 42			
	Mars W.	92 21 34	2550	94 1 38	2540	95 47			
	Regulus W.	78 19 2	2454	80 1 20	2445	81			
	Spica π W.	24 17 51	2474	25 59 41	2462	27			

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.		Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	P. L. of diff.
			° ' "		° ' "		° ' "		° ' "	
21	Antares	E.	28 37 23	2486	26 55 50	2477	25 14 5	2468	23 32 7	2460
	α Aquilæ	E.	81 57 53	3349	80 34 38	3347	79 11 21	3348	77 48 5	3350
22	Jupiter	W.	104 7 6	2439	105 49 45	2431	107 32 35	2424	109 15 35	2411
	Mars	W.	99 3 3	2516	100 43 54	2508	102 24 56	2501	104 6 8	2491
	Regulus	W.	85 9 27	2420	86 52 33	2412	88 35 51	2405	90 19 19	2397
	Spica η	W.	31 6 52	2428	32 49 46	2419	34 32 54	2410	36 16 15	2401
	α Aquilæ	E.	70 53 5	3390	69 30 37	3405	68 8 26	3423	66 46 35	3442
	Fomalhaut	E.	97 33 36	2593	95 54 32	2585	94 15 16	2576	92 35 48	2569
23	Mars	W.	112 34 28	2463	114 16 33	2458	115 58 46	2453	117 41 6	2448
	Spica η	W.	44 55 52	2364	46 40 18	2358	48 24 53	2352	50 9 37	2347
	Saturn	W.	22 34 0	2390	24 17 49	2378	26 1 55	2366	27 46 19	2351
	Fomalhaut	E.	84 16 6	2539	82 35 47	2535	80 55 23	2531	79 14 53	2528
	α Pegasi	E.	104 50 21	2730	103 14 21	2719	101 38 6	2709	100 1 38	2700
24	Spica η	W.	58 55 4	2324	60 40 29	2320	62 25 59	2316	64 11 35	2312
	Saturn	W.	36 31 27	2319	38 16 58	2313	40 2 38	2309	41 48 25	2304
	Antares	W.	13 2 5	2340	14 47 6	2331	16 32 20	2325	18 17 43	2319
	Fomalhaut	E.	70 51 44	2525	69 11 5	2526	67 30 28	2528	65 49 54	2531
	α Pegasi	E.	91 56 43	2669	90 19 21	2665	88 41 54	2662	87 4 23	2661
	SUN	E.	- - -	- -	- - -	- -	130 6 19	2618	128 27 49	2615
25	Spica η	W.	73 0 37	2300	74 46 36	2298	76 32 38	2297	78 18 42	2296
	Saturn	W.	50 38 48	2287	52 25 7	2285	54 11 29	2282	55 57 55	2281
	Antares	W.	27 6 24	2300	28 52 23	2298	30 38 25	2296	32 24 31	2294
	Fomalhaut	E.	57 28 34	2561	55 48 46	2572	54 9 12	2583	52 29 53	2590
	α Pegasi	E.	78 56 35	2663	77 19 6	2667	75 41 42	2672	74 4 24	2677
	SUN	E.	120 14 16	2602	118 35 23	2600	116 56 28	2598	115 17 30	2597
26	Spica η	W.	87 9 28	2291	88 55 40	2291	90 41 53	2291	92 28 6	2290
	Saturn	W.	64 50 38	2274	66 37 16	2273	68 23 55	2272	70 10 35	2272
	Antares	W.	41 15 31	2288	43 1 48	2288	44 48 5	2287	46 34 23	2287
	Fomalhaut	E.	44 18 36	2692	42 41 45	2719	41 5 31	2751	39 29 59	2788
	α Pegasi	E.	66 0 13	2721	64 24 1	2734	62 48 6	2748	61 12 30	2765
	SUN	E.	107 2 19	2592	105 23 13	2592	103 44 7	2592	102 5 1	2591
27	Saturn	W.	79 3 55	2273	80 50 34	2274	82 37 12	2275	84 23 48	2276
	Antares	W.	55 25 53	2288	57 12 10	2289	58 58 26	2290	60 44 40	2291
	Fomalhaut	E.	31 46 47	3074	30 18 6	3164	28 51 14	3270	27 26 27	3390
	α Pegasi	E.	53 20 36	2876	51 47 46	2906	50 15 35	2940	48 44 7	2977
	SUN	E.	93 49 30	2593	92 10 26	2594	90 31 23	2595	88 52 21	2596
28	Saturn	W.	93 16 28	2283	95 2 53	2284	96 49 16	2286	98 35 36	2288
	Antares	W.	69 35 28	2298	71 21 31	2299	73 7 32	2301	74 53 30	2303
	α Pegasi	E.	41 20 18	3243	39 55 0	3318	38 31 9	3403	37 8 56	3500
	SUN	E.	80 37 38	2603	78 58 47	2606	77 20 0	2607	75 41 15	2612
29	Saturn	W.	107 26 25	2301	109 12 23	2304	110 58 17	2307	112 44 6	2311
	Antares	W.	83 42 31	2315	85 28 9	2318	87 13 42	2321	88 59 11	2324
	SUN	E.	67 28 19	2623	65 49 56	2626	64 11 36	2629	62 33 21	2633
30	Antares	W.	97 45 20	2343	99 30 17	2347	101 15 8	2351	102 59 53	2355
	α Aquilæ	W.	55 12 8	3726	56 28 28	3670	57 45 47	3624	59 3 55	3583
	SUN	E.	54 23 20	2653	52 45 37	2657	51 7 59	2662	49 30 28	2667

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
21	Antares E.	21 49 58	2453	20 7 38	2446	18 25 8	2440	16 42 30	2434
	α Aquilæ E.	76 24 51	3354	75 1 42	3359	73 38 39	3368	72 15 46	3379
22	Jupiter W.	110 58 44	2411	112 42 3	2405	114 25 31	2399	116 9 7	2393
	Mars W.	105 47 30	2487	107 29 2	2481	109 10 42	2475	110 52 31	2469
	Regulus W.	92 2 58	2390	93 46 47	2384	95 30 44	2378	97 14 51	2372
	Spica ♀ W.	37 59 49	2393	39 43 34	2386	41 27 29	2378	43 11 35	2371
	α Aquilæ E.	65 25 6	3466	64 4 4	3491	62 43 30	3522	61 23 30	3560
	Fomalhaut E.	90 56 10	2561	89 16 22	2555	87 36 25	2548	85 56 19	2543
23	Mars W.	119 23 32	2443	121 6 5	2440	122 48 43	2436	124 31 26	2432
	Spica ♀ W.	51 54 28	2342	53 39 26	2337	55 24 32	2332	57 9 45	2328
	Saturn W.	29 30 57	2347	31 15 48	2339	33 0 51	2332	34 46 4	2325
	Fomalhaut E.	77 34 19	2527	75 53 43	2525	74 13 4	2524	72 32 24	2524
	α Pegasi E.	98 24 58	2692	96 48 7	2685	95 11 7	2679	93 33 59	2673
24	Spica ♀ W.	65 57 15	2310	67 43 0	2307	69 28 49	2305	71 14 41	2302
	Saturn W.	43 34 19	2300	45 20 18	2296	47 6 23	2293	48 52 33	2289
	Antares W.	20 3 15	2314	21 48 54	2310	23 34 39	2306	25 20 29	2303
	Fomalhaut E.	64 9 24	2535	62 29 0	2540	60 48 42	2546	59 8 33	2553
	α Pegasi E.	85 26 50	2660	83 49 16	2659	82 11 41	2660	80 34 7	2661
	SUN E.	126 49 14	2612	125 10 35	2609	123 31 52	2606	121 53 5	2604
25	Spica ♀ W.	80 4 48	2294	81 50 56	2293	83 37 5	2292	85 23 16	2291
	Saturn W.	57 44 23	2279	59 30 54	2277	61 17 27	2276	63 4 2	2275
	Antares W.	34 10 39	2292	35 56 50	2291	37 43 2	2290	39 29 16	2289
	Fomalhaut E.	50 50 52	2610	49 12 11	2627	47 33 53	2646	45 56 0	2667
	α Pegasi E.	72 27 14	2583	70 50 12	2691	69 13 20	2700	67 36 40	2710
	SUN E.	113 38 31	2596	111 59 30	2595	110 20 28	2593	108 41 24	2593
26	Spica ♀ W.	94 14 20	2290	96 0 34	2291	97 46 47	2291	99 33 0	2291
	Saturn W.	71 57 15	2272	73 43 55	2272	75 30 35	2272	77 17 15	2272
	Antares W.	48 20 41	2287	50 6 59	2287	51 53 18	2287	53 39 36	2288
	Fomalhaut E.	37 55 15	2830	36 21 26	2878	34 48 39	2933	33 17 2	2998
	α Pegasi E.	59 37 16	2782	58 2 24	2802	56 27 58	2824	54 54 1	2849
	SUN E.	100 25 54	2591	98 46 47	2592	97 7 41	2592	95 28 35	2593
27	Saturn W.	86 10 23	2277	87 56 57	2278	89 43 29	2279	91 30 0	2281
	Antares W.	62 30 53	2292	64 17 4	2293	66 3 14	2294	67 49 22	2296
	Fomalhaut E.	26 4 6	3548	24 44 35	3732	- - -	- - -	- - -	- - -
	α Pegasi E.	47 13 25	3018	45 43 35	3066	44 14 44	3118	42 46 56	3176
	SUN E.	87 13 21	2597	85 34 22	2590	83 25 25	2600	82 16 30	2602
28	Saturn W.	100 21 53	2290	102 8	-	104 17	2296	105 40 23	2298
	Antares W.	76 39 25	2305	78	-	1 5	2310	81 56 50	2313
	α Pegasi E.	35 48 32	3611	34	-	- - -	- - -	- - -	- - -
	SUN E.	74 2 33	2612	72	-	19	2617	69 6 47	2620
29	Saturn W.	114 29 50	2315	116	-	1	2322	119 46 28	2326
	Antares W.	90 44 35	2328	92	-	8	2335	96 0 17	2339
	SUN E.	60 55 11	2636	59	-	5	2644	56 1 10	2648
30	Antares W.	104 44 31	2361	-	-	26	2371	109 57 42	2376
	α Aquilæ W.	60 22 48	-	-	-	34	2481	64 23 19	2455
	SUN E.	47 53 4	-	-	-	24	2600	43 1 36	2689

CONFIGURATIONS OF THE SATELLITES OF JUPITER.

At 10^h 30^m, MEAN TIME.

Day of the Month.	<i>West.</i>		<i>East.</i>	
1		'3	○	·41· ·2
2		·3	·1 ○	2· ·4
3	● ·3	2·	○	·4 1·0
4			·2 ○	·1 ·3 ·4
5		1·	○	2· 3· 4·
6			2· ○	3· ·1 4·
7		3· ·2	·1 ○	4·
8		3·	○	1· ·2 4·
9		·3	·1 ○	2· 4·0
10		4· 2·	○ 1·	● ·3
11		4·	·2 ○	·3 ● ·1
12			1· ○	·2 3·
13		·4	○	·13· 2·0
14		·4	·2 3· ·1	○
15		·4 3·	○	·21·
16		·4 ·3	·1 ○	2·
17			2· ·4 ·2 ○	1·
18	·1 ● ·4		·2 ○	·3
19			1· ○	·2 3· 4
20			○ 2· ·1	3· ·4
21			·2 1·3· ○	·4
22	● ·2	3·	○	1· 4·
23		·3	·1 ○	2· 4·
24			2· ·3 ○	1· 4·
25			·2 ·1 ○	4· ·3
26	○ 1·		4· ○	·2 3·
27		4·	○	2· ·1 3·
28		4·	2· 1· 3· ○	
29		4·	3· ○	·1 ● ·3
30		·4	·3 ·1 ○	2·

This Table represents, at 10^h 30^m after *Mean Noon* of each day of the month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is *on the disc of Jupiter*, and a black circle (●) that it is either *behind the disc*, or in the *shadow*, of Jupiter.

ECLIPSES OF THE SATELLITES OF JUPITER.

SATELLITE.	Day of the Month.	Mean Time.	Sidereal Time.	PHASE as seen in an inverting Telescope.
I.		h m s	h m s	
	2	15 26 11.8	16 11 13.1	Em.
	4*	9 54 56.0	10 46 56.0	Em.
	6	4 23 37.4	5 22 36.1	Em.
	7	22 52 22.1	23 58 19.4	Em.
	9	17 21 4.5	18 34 0.5	Em.
	11*	11 49 49.1	13 9 43.8	Em.
	13	6 18 31.5	7 45 24.9	Em.
	15	0 47 16.9	2 21 8.9	Em.
	16	19 15 59.7	20 56 50.4	Em.
	18	13 44 45.8	15 32 35.2	Em.
	20*	8 13 28.9	10 8 17.0	Em.
	22	2 42 14.8	4 44 1.6	Em.
	23	21 10 58.3	23 19 43.9	Em.
	25	15 39 44.7	17 55 28.9	Em.
	27*	10 8 28.8	12 31 11.8	Em.
	29	4 37 15.5	7 6 57.1	Em.
	30	23 5 59.3	1 42 39.6	Em.
II.	1	3 48 25.8	4 27 35.9	Em.
	4	17 6 32.2	17 59 43.0	Em.
	8	6 25 23.4	7 32 35.1	Em.
	11	19 43 28.2	21 4 40.7	Em.
	15*	9 2 14.8	10 37 28.2	Em.
	18	22 20 17.7	0 9 31.8	Em.
	22*	11 38 58.1	13 42 13.1	Em.
	26	0 56 58.7	3 14 14.5	Em.
	29	14 15 32.5	16 46 49.2	Em.
III.	3*	8 11 16.3	8 59 2.6	Im.
	3*	11 44 34.2	12 32 55.6	Em.
	10*	12 10 32.2	13 26 33.8	Im.
	10	15 43 47.5	17 0 24.1	Em.
	17	16 9 37.5	17 53 54.2	Im.
	17	19 42 49.0	21 27 40.8	Em.
	24	20 8 48.3	22 21 20.1	Im.
IV.	24	23 41 55.9	1 55 2.7	E
	1*	12 14 40.4	12 55 13.6	
	1	16 59 38.6	17 40 58.6	
	18	6 17 8.2	8 3 44.1	
	18*	11 2 28.2	12 31 11.8	

APPROXIMATE SIDEREAL TIMES
OF THE
OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER,
AND OF THE
TRANSITS OF THE SATELLITES AND THEIR SHADOWS
OVER THE DISC OF THE PLANET,

Satellite.	OCCULTATIONS.		TRANSITS OF SATELLITES.		TRANSITS OF SHADOWS.	
	Immersion.	Emersion.	Ingress.	Egress.	Ingress.	Egress.
	d h m	d h m	d h m	d h m	d h m	d h m
I.	2* 12 44 4 7 18 6 1 53 7 20 28 9* 15 3 11* 9 38 13 4 13 14 22 48 16 17 23 18* 11 59 20 6 34 21 1 9 23 19 45 25* 14 20 27 8 56 29 3 32 30 22 7	In the Shadow.	1 15 31 3* 10 6 5 4 41 6 23 16 8 17 51 10* 12 26 12 7 1 14 1 36 15 20 12 17* 14 47 19 9 22 21 3 58 22 22 33 24 17 9 26* 11 44 28 6 20 29 0 56	1 17 52 3* 12 27 5 7 2 7 1 37 8 20 12 10* 14 47 12* 9 22 14 3 57 15 22 32 17 17 8 19* 11 43 21 6 18 22 0 54 24 19 30 26* 14 5 28 8 41 30 3 16	1 16 40 3* 11 16 5 5 52 6 0 28 8 19 4 10* 13 39 12 8 15 14 2 51 15 21 27 17 16 3 19* 10 38 21 5 14 22 23 50 24 18 25 26* 13 1 28 7 37 29 2 13	1 19 1 3* 13 37 5 8 13 7 2 48 8 21 24 10 16 0 12* 10 36 14 5 12 15 23 47 17 18 23 19* 12 59 21 7 35 23 2 10 24 20 46 26* 15 22 28 9 58 30 4 33
II.	4* 12 42 8 2 11 11 15 40 15 5 11 18 18 41 22 8 13 25 21 44 29* 11 17	In the Shadow.	2 17 32 6 7 0 9 20 28 13* 9 58 16 23 27 20* 12 58 24 2 28 27 16 0	2 20 28 6* 9 57 9 23 25 13* 12 54 17 2 24 20 15 55 24 5 25 27 18 57	2 19 53 6* 9 25 9 22 56 13* 12 28 17 2 0 20 15 32 24 5 3 27 18 36	2 22 49 6* 12 22 10 1 53 13* 15 25 17 4 56 20 18 29 24 8 0 27 21 32
III.	3 4 12 10 8 25 17* 12 43 24 17 5	3 7 55 10* 12 9 17 16 26 24 20 49	6 18 12 13 22 28 21 2 49 28 7 14	6 21 56 14 2 12 21 6 33 28* 10 58	6 23 2 14 3 29 21 7 58 28* 12 26	7 2 45 14 7 13 21* 11 31 28 16 8
IV.	1 1 59 17 20 1	1 6 53 17 0 54	9* 9 15 26 3 43	9* 14 8 26 8 36	9 20 39 26 15 46	10 2 28 27 11 11

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time	Mean Equinoctial Time, adding 0 ^h .778395. Days.	From Mean Noon of January 1.	
	At Mean Midnight,				of		Day of the Year.	Fraction of the Year.
	Logarithm of				Transit			
					of the First Point of Aries.			
A	B	C	D					
1	-1°26'16	-0°62'84	+8°74'20	-0°91'57	23 17 37·85	9	90	·246
2	1°26'00	0°66'20	8°75'92	0°91'55	23 13 41·95	10	91	·249
3	1°25'82	0°69'30	8°77'58	0°91'53	23 9 46·05	11	92	·252
4	-1°25'62	-0°72'18	+8°79'18	-0°91'50	23 5 50·14	12	93	·255
5	1°25'42	0°74'87	8°80'74	0°91'48	23 1 54·24	13	94	·257
6	1°25'20	0°77'39	8°82'26	0°91'45	22 57 58·34	14	95	·260
7	-1°24'96	-0°79'76	+8°83'74	-0°91'41	22 54 2·43	15	96	·263
8	1°24'71	0°81'99	8°85'18	0°91'38	22 50 6·52	16	97	·266
9	1°24'45	0°84'10	8°86'59	0°91'34	22 46 10·61	17	98	·268
10	-1°24'18	-0°86'10	+8°87'96	-0°91'30	22 42 14·70	18	99	·271
11	1°23'89	0°88'00	8°89'30	0°91'25	22 38 18·78	19	100	·274
12	1°23'58	0°89'80	8°90'61	0°91'21	22 34 22·87	20	101	·277
13	-1°23'26	-0°91'52	+8°91'89	-0°91'16	22 30 26·96	21	102	·279
14	1°22'93	0°93'16	8°93'15	0°91'11	22 26 31·05	22	103	·282
15	1°22'58	0°94'73	8°94'38	0°91'06	22 22 35·14	23	104	·285
16	-1°22'21	-0°96'23	+8°95'60	-0°91'00	22 18 39·23	24	105	·287
17	1°21'83	0°97'66	8°96'79	0°90'94	22 14 43·33	25	106	·290
18	1°21'43	0°99'04	8°97'96	0°90'88	22 10 47·42	26	107	·293
19	-1°21'02	-1°00'36	+8°99'11	-0°90'82	22 6 51·52	27	108	·296
20	1°20'59	1°01'63	9°00'25	0°90'76	22 2 55·62	28	109	·298
21	1°20'14	1°02'85	9°01'36	0°90'70	21 58 59·71	29	110	·301
22	-1°19'68	-1°04'03	+9°02'45	-0°90'63	21 55 3·80	30	111	·304
23	1°19'20	1°05'16	9°03'53	0°90'56	21 51 7·89	31	112	·307
24	1°18'70	1°06'25	9°04'59	0°90'49	21 47 11·97	32	113	·309
25	-1°18'19	-1°07'30	+9°05'64	-0°90'42	21 43 16·06	33	114	·312
26	1°17'63	1°08'31	9°06'67	0°90'35	21 39 20·14	34	115	·315
27	1°17'10	1°09'29	9°07'70	0°90'28	21 35 24·23	35	116	·318
28	-1°16'58	-1°10'24	+9°08'71	-0°90'20	21 31 28·32	36	117	·320
29	1°16'58	1°11'15	9°09'70	0°90'13	21 27 32·41	37	118	·323
30	1°16'58	1°12'03	9°10'68	0°90'05	21 23 36·51	38	119	·326
		88	+9°11'65	-0°89'98	21 19 40·60	39	120	·329

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.			
		h m s	s	° ' "	"	m s	m s	s
Mon.	1	2 33 44.13	9.551	N.15 5 56.5	45.04	1 5.98	3 4.54	0.305
Tues.	2	2 37 33.35	9.574	15 23 57.5	44.41	1 6.05	3 11.85	0.282
Wed.	3	2 41 23.12	9.597	15 41 43.3	43.76	1 6.13	3 18.61	0.259
Thur.	4	2 45 13.45	9.621	15 59 13.6	43.10	1 6.21	3 24.82	0.235
Frid.	5	2 49 4.36	9.644	16 16 28.0	42.43	1 6.29	3 30.46	0.212
Sat.	6	2 52 55.82	9.668	16 33 26.3	41.75	1 6.37	3 35.54	0.188
Sun.	7	2 56 47.86	9.692	16 50 8.2	41.04	1 6.45	3 40.05	0.165
Mon.	8	3 0 40.46	9.715	17 6 33.2	40.33	1 6.54	3 44.00	0.141
Tues.	9	3 4 33.62	9.739	17 22 41.0	39.60	1 6.62	3 47.39	0.118
Wed.	10	3 8 27.35	9.761	17 38 31.5	38.86	1 6.70	3 50.21	0.095
Thur.	11	3 12 21.62	9.785	17 54 4.1	38.11	1 6.79	3 52.49	0.072
Frid.	12	3 16 16.45	9.808	18 9 18.7	37.34	1 6.87	3 54.22	0.049
Sat.	13	3 20 11.84	9.831	18 24 14.9	36.57	1 6.95	3 55.39	0.025
Sun.	14	3 24 7.78	9.854	18 38 52.5	35.78	1 7.04	3 55.99	0.002
Mon.	15	3 28 4.28	9.878	18 53 11.2	34.98	1 7.12	3 56.04	0.021
Tues.	16	3 32 1.34	9.900	19 7 10.8	34.17	1 7.20	3 55.53	0.044
Wed.	17	3 35 58.95	9.924	19 20 50.9	33.35	1 7.27	3 54.47	0.067
Thur.	18	3 39 57.12	9.947	19 34 11.4	32.53	1 7.35	3 52.87	0.090
Frid.	19	3 43 55.84	9.970	19 47 12.0	31.69	1 7.43	3 50.71	0.113
Sat.	20	3 47 55.13	9.993	19 59 52.5	30.84	1 7.51	3 47.99	0.136
Sun.	21	3 51 54.97	10.016	20 12 12.7	29.98	1 7.59	3 44.73	0.159
Mon.	22	3 55 55.35	10.039	20 24 12.2	29.12	1 7.66	3 40.91	0.181
Tues.	23	3 59 56.28	10.060	20 35 51.0	28.24	1 7.74	3 36.56	0.203
Wed.	24	4 3 57.73	10.082	20 47 8.7	27.35	1 7.81	3 31.69	0.225
Thur.	25	4 7 59.70	10.105	20 58 5.1	26.45	1 7.88	3 26.29	0.247
Frid.	26	4 12 2.21	10.125	21 8 40.0	25.55	1 7.95	3 20.36	0.268
Sat.	27	4 16 5.21	10.145	21 18 53.1	24.63	1 8.01	3 13.93	0.288
Sun.	28	4 20 8.70	10.167	21 28 44.3	23.70	1 8.08	3 7.01	0.310
Mon.	29	4 24 12.70	10.186	21 38 13.2	22.77	1 8.14	2 59.58	0.329
Tues.	30	4 28 17.16	10.205	21 47 19.7	21.83	1 8.20	2 51.69	0.347
Wed.	31	4 32 22.07	10.223	21 56 3.6	20.88	1 8.26	2 43.37	0.365
Thur.	32	4 36 27.42		N.22 4 24.6		1 8.32	2 34.60	

* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
		Right Ascension.	Declination.	Semidiam.*		
		h m s	° ' "	' "	m s	h m s
Mon.	1	2 33 44.62	N.15 5 58.8	15 52.9	3 4.56	2 36 49.18
Tues.	2	2 37 33.86	15 23 59.9	15 52.7	3 11.87	2 40 45.73
Wed.	3	2 41 23.65	15 41 45.7	15 52.4	3 18.63	2 44 42.28
Thur.	4	2 45 14.00	15 59 16.0	15 52.2	3 24.84	2 48 38.84
Frid.	5	2 49 4.92	16 16 30.5	15 52.0	3 30.47	2 52 35.39
Sat.	6	2 52 56.40	16 33 28.8	15 51.7	3 35.55	2 56 31.95
Sun.	7	2 56 48.45	16 50 10.7	15 51.5	3 40.06	3 0 28.51
Mon.	8	3 0 41.06	17 6 35.7	15 51.3	3 44.01	3 4 25.07
Tues.	9	3 4 34.23	17 22 43.6	15 51.1	3 47.40	3 8 21.63
Wed.	10	3 8 27.97	17 38 34.0	15 50.9	3 50.22	3 12 18.19
Thur.	11	3 12 22.25	17 54 6.6	15 50.7	3 52.50	3 16 14.75
Frid.	12	3 16 17.09	18 9 21.2	15 50.5	3 54.22	3 20 11.31
Sat.	13	3 20 12.48	18 24 17.3	15 50.3	3 55.39	3 24 7.87
Sun.	14	3 24 8.43	18 38 54.9	15 50.1	3 55.99	3 28 4.42
Mon.	15	3 28 4.93	18 53 13.6	15 49.9	3 56.04	3 32 0.97
Tues.	16	3 32 1.99	19 7 13.1	15 49.7	3 55.53	3 35 57.52
Wed.	17	3 35 59.60	19 20 53.2	15 49.6	3 54.47	3 39 54.07
Thur.	18	3 39 57.76	19 34 13.6	15 49.4	3 52.87	3 43 50.63
Frid.	19	3 43 56.48	19 47 14.1	15 49.2	3 50.70	3 47 47.18
Sat.	20	3 47 55.76	19 59 54.5	15 49.0	3 47.98	3 51 43.74
Sun.	21	3 51 55.59	20 12 14.6	15 48.8	3 44.72	3 55 40.31
Mon.	22	3 55 55.97	20 24 14.1	15 48.7	3 40.90	3 59 36.87
Tues.	23	3 59 56.88	20 35 52.8	15 48.5	3 36.55	4 3 33.43
Wed.	24	4 3 58.32	20 47 10.4	15 48.3	3 31.68	4 7 30.00
Thur.	25	4 8 0.28	20 58 6.7	15 48.2	3 26.28	4 11 26.56
Frid.	26	4 12 2.77	21 8 41.5	15 48.0	3 20.34	4 15 23.11
Sat.	27	4 16 5.76	21 18 14.3	15 47.8	3 13.91	4 19 19.67
Sun.	28	4 20 9.23	21 28 1.5	15 47.7	3 6.99	4 23 16.22
Mon.	29	4 24 13.21	21 37 1.4	15 47.5	2 59.56	4 27 12.77
Tues.	30	4 28 17.19	21 45 1.8	15 47.4	2 51.67	4 31 9.32
Wed.	31	4 32 21.17	21 52 1.9	15 47.2	2 43.35	4 35 5.88
Thur.	32	4 36 25.15	22 0 1.1	15 47.1	2 34.58	4 39 2.44

* The Sun

is same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	40° 51' 51" 9	S. 0° 16'	0.0036377	15 57.3	15 54.3	58 33.2	58 22.1
2	41 50 1.2	S. 0° 04'	0.0037457	15 51.0	15 47.3	58 9.9	57 56.3
3	42 48 8.8	N. 0° 10'	0.0038521	15 43.2	15 38.8	57 41.2	57 25.3
4	43 46 14.8	0° 24'	0.0039567	15 34.3	15 29.5	57 8.5	56 51.0
5	44 44 19.3	0° 38'	0.0040597	15 24.6	15 19.8	56 33.2	56 15.4
6	45 42 22.1	0° 50'	0.0041607	15 15.0	15 10.3	55 57.8	55 40.7
7	46 40 23.4	0° 62'	0.0042599	15 5.9	15 1.8	55 24.4	55 9.2
8	47 38 22.9	0° 70'	0.0043573	14 58.0	14 54.6	54 55.3	54 42.9
9	48 36 20.6	0° 77'	0.0044529	14 51.8	14 49.5	54 32.7	54 24.2
10	49 34 16.6	0° 80'	0.0045467	14 47.8	14 46.8	54 18.1	54 14.3
11	50 32 10.6	0° 81'	0.0046390	14 46.5	14 46.8	54 13.1	54 14.4
12	51 30 2.9	0° 80'	0.0047298	14 47.9	14 49.6	54 18.2	54 24.7
13	52 27 53.2	0° 74'	0.0048191	14 52.1	14 55.2	54 33.6	54 45.1
14	53 25 41.9	0° 66'	0.0049072	14 59.0	15 3.3	54 58.9	55 14.7
15	54 23 28.8	0° 56'	0.0049941	15 8.1	15 13.4	55 32.4	55 52.0
16	55 21 14.2	0° 44'	0.0050801	15 19.1	15 25.1	56 12.9	56 34.9
17	56 18 57.8	0° 31'	0.0051649	15 31.3	15 37.5	56 57.5	57 20.3
18	57 16 40.0	0° 18'	0.0052486	15 43.6	15 49.6	57 42.6	58 4.6
19	58 14 20.8	N. 0° 05'	0.0053314	15 55.2	16 0.5	58 25.3	58 44.7
20	59 12 0.4	S. 0° 07'	0.0054132	16 5.2	16 9.3	59 1.9	59 16.9
21	60 9 38.8	0° 16'	0.0054941	16 12.7	16 15.3	59 29.4	59 39.0
22	61 7 16.1	0° 24'	0.0055739	16 17.1	16 18.2	59 45.8	59 49.8
23	62 4 52.3	0° 29'	0.0056526	16 18.5	16 18.1	59 51.0	59 49.3
24	63 2 27.4	0° 30'	0.0057302	16 17.0	16 15.3	59 45.3	59 39.0
25	64 0 1.4	0° 29'	0.0058064	16 13.1	16 10.5	59 30.9	59 21.3
26	64 57 34.7	0° 25'	0.0058812	16 7.5	16 4.2	59 10.4	58 58.5
27	65 55 7.0	0° 18'	0.0059543	16 0.8	15 57.2	58 45.8	58 32.5
28	66 52 38.4	S. 0° 08'	0.0060256	15 53.4	15 49.6	58 18.6	58 4.6
29	67 50 9.2	N. 0° 04'	0.0060950	15 45.7	15 41.6	57 50.3	57 35.5
30	68 47 39.2	0° 16'	0.0061624	15 37.6	15 33.6	57 20.7	57 5.9
31	69 45 8.2	0° 30'	0.0062275	15 29.5	15 25.4	56 51.0	56 35.9
32	70 42 36.7	N. 0° 44'	0.0062904	15 21.3	15 17.3	56 20.9	56 6.1

MEAN TIME.

Day of the Week.	Day of the Month.	THE MOON'S					
		Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
		[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	^d	^h ^m
Mon.	1	359 31 51.5	6 26 14.5	S. 2 48 22.1	S. 2 14 52.0	26.2	22 7.3
Tues.	2	13 17 50.0	20 6 24.2	1 39 38.1	S. 1 3 14.8	27.2	22 53.5
Wed.	3	26 51 42.7	33 33 34.6	S. 0 26 15.7	N. 0 10 45.7	28.2	23 40.8
Thur.	4	40 11 48.9	46 46 17.6	N. 0 47 17.3	1 22 49.4	29.2	♄
Frid.	5	53 16 54.5	59 43 37.2	1 56 54.3	2 29 7.4	0.7	0 29.9
Sat.	6	66 6 25.9	72 25 24.5	2 59 7.5	3 26 36.5	1.7	1 20.9
Sun.	7	78 40 40.3	84 52 24.2	3 51 19.2	4 13 3.1	2.7	2 13.6
Mon.	8	91 0 49.8	97 6 15.8	4 31 39.1	4 47 0.6	3.7	3 6.8
Tues.	9	103 9 2.8	109 9 35.7	4 59 3.4	5 7 43.4	4.7	3 59.3
Wed.	10	115 8 20.4	121 5 46.7	5 12 59.6	5 14 52.4	5.7	4 49.9
Thur.	11	127 2 25.6	132 58 49.7	5 13 22.3	5 8 31.2	6.7	5 38.0
Frid.	12	138 55 32.5	144 53 9.8	5 0 21.3	4 48 56.5	7.7	6 23.3
Sat.	13	150 52 16.7	156 53 27.7	4 34 20.6	4 16 38.9	8.7	7 6.5
Sun.	14	162 57 18.3	169 4 21.8	3 55 57.8	3 32 25.1	9.7	7 48.3
Mon.	15	175 15 10.4	181 30 13.1	3 6 10.1	2 37 25.0	10.7	8 29.8
Tues.	16	187 49 56.3	194 14 42.5	2 6 24.0	1 33 23.6	11.7	9 12.0
Wed.	17	200 44 49.8	207 20 30.0	N. 0 58 44.2	N. 0 22 49.8	12.7	9 56.4
Thur.	18	214 1 48.6	220 48 45.1	S. 0 13 52.1	S. 0 50 51.9	13.7	10 44.1
Frid.	19	227 41 10.5	234 38 50.1	1 27 35.3	2 3 26.4	14.7	11 36.4
Sat.	20	241 41 18.3	248 48 6.2	2 37 48.5	3 10 2.2	15.7	12 33.8
Sun.	21	255 58 34.7	263 12 3.1	3 39 31.4	4 5 42.2	16.7	13 35.8
Mon.	22	270 27 43.7	277 44 49.1	4 28 2.3	4 46 5.8	17.7	14 40.3
Tues.	23	285 2 29.5	292 19 59.3	4 59 32.2	5 8 6.9	18.7	15 44.0
Wed.	24	299 36 32.5	306 51 31.3	5 11 42.6	5 10 18.5	19.7	16 44.3
Thur.	25	314 4 20.0	321 14 32.0	5 " "	4 37.7	20.7	17 40.0
Frid.	26	328 21 43.4	335 25 39		31.6	21.7	18 31.2
Sat.	27	342 26 8.5	349 23 5		56.3	22.7	19 19.0
Sun.	28	356 16 27.6	3 6 16	2	49.8	23.7	20 4.9
Mon.	29	9 52 34.1	16 35 26	1		24.7	20 50.1
Tues.	30	23 14 58.5	29 5.1	0		25.7	21 36.0
Wed.	31	36 24 23.7	41			26.7	22 23.6
Thur.	32	49 21 29.0	5			27.7	23 13.2

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 1.				WEDNESDAY 3.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	0 2 45.10	S. 2 45 38.5	162.75	0	1 40 19.38	N. 9 57 20.9	149.83
1	0 4 47.80	2 29 22.0	162.78	1	1 42 22.31	10 12 19.9	149.25
2	0 6 50.41	2 13 5.3	162.82	2	1 44 25.34	10 27 15.4	148.65
3	0 8 52.91	1 56 48.4	162.85	3	1 46 28.48	10 42 7.3	148.05
4	0 10 55.32	1 40 31.3	162.88	4	1 48 31.74	10 56 55.6	147.42
5	0 12 57.64	1 24 14.2	162.85	5	1 50 35.11	11 11 40.1	146.78
6	0 14 59.87	1 7 57.1	162.82	6	1 52 38.60	11 26 20.8	146.13
7	0 17 2.03	0 51 40.2	162.78	7	1 54 42.22	11 40 57.6	145.48
8	0 19 4.11	0 35 23.5	162.73	8	1 56 45.96	11 55 30.5	144.80
9	0 21 6.12	0 19 7.1	162.67	9	1 58 49.83	12 9 59.3	144.13
10	0 23 8.07	S. 0 2 51.1	162.60	10	2 0 53.83	12 24 24.1	143.42
11	0 25 9.95	N. 0 13 24.5	162.50	11	2 2 57.97	12 38 44.6	142.72
12	0 27 11.78	0 29 39.5	162.40	12	2 5 2.25	12 53 0.9	142.00
13	0 29 13.56	0 45 53.9	162.28	13	2 7 6.67	13 7 12.9	141.25
14	0 31 15.29	1 2 7.6	162.13	14	2 9 11.23	13 21 20.4	140.52
15	0 33 16.98	1 18 20.4	162.00	15	2 11 15.93	13 35 23.5	139.77
16	0 35 18.64	1 34 32.4	161.85	16	2 13 20.79	13 49 22.1	138.98
17	0 37 20.26	1 50 43.5	161.67	17	2 15 25.80	14 3 16.0	138.22
18	0 39 21.86	2 6 53.5	161.48	18	2 17 30.96	14 17 5.3	137.42
19	0 41 23.43	2 23 2.4	161.28	19	2 19 36.28	14 30 49.8	136.62
20	0 43 24.99	2 39 10.1	161.08	20	2 21 41.75	14 44 29.5	135.80
21	0 45 26.53	2 55 16.6	160.83	21	2 23 47.39	14 58 4.3	134.98
22	0 47 28.07	3 11 21.6	160.62	22	2 25 53.20	15 11 34.2	134.13
23	0 49 29.60	N. 3 27 25.3	160.35	23	2 27 59.17	N. 15 24 59.0	133.28
TUESDAY 2.				THURSDAY 4.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	0 51 31.14	N. 3 43 27.4	160.08	0	2 30 5.30	N. 15 38 18.7	132.43
1	0 53 32.68	3 59 27.9	159.82	1	2 32 11.61	15 51 33.3	131.53
2	0 55 34.23	4 15 26.8	159.52	2	2 34 18.09	16 4 42.6	130.67
3	0 57 35.80	4 31 23.9	159.22	3	2 36 24.75	16 17 46.6	129.78
4	0 59 37.38	4 47 19.2	158.88	4	2 38 31.58	16 30 45.3	128.87
5	1 1 38.99	5 3 12.5	158.57	5	2 40 38.59	16 43 38.5	127.95
6	1 3 40.62	5 19 3.9	158.22	6	2 42 45.78	16 56 26.2	127.02
7	1 5 42.29	5 34 53.2	157.87	7	2 44 53.15	17 9 8.3	126.08
8	1 7 43.99	5 50 40.4	157.48	8	2 47 0.70	17 21 44.8	125.12
9	1 9 45.73	6 6 25.3	157.12	9	2 49 8.43	17 34 15.5	124.18
10	1 11 47.51	6 22 8.0	156.72	10	2 51 16.35	17 46 40.6	123.18
11	1 13 49.34	6 37 48.3	156.30	11	2 53 24.45	17 58 59.7	122.22
12	1 15 51.23	6 53 26.1	155.88	12	2 55 32.75	18 11 13.0	121.22
13	1 17 53.17	7 9 1.4	155.45	13	2 57 41.23	18 23 20.3	120.22
14	1 19 55.17	7 24 34.1	155.00	14	2 59 49.90	18 35 21.6	119.18
15	1 21 57.24	7 40 4.1	154.53	15	3 1 58.76	18 47 16.7	118.18
16	1 23 59.37	7 55 31.3	154.08	16	3 4 7.81	18 59 5.8	117.13
17	1 26 1.58	8 10 55.8	153.58	17	3 6 17.06	19 10 48.6	116.08
18	1 28 3.86	8 26 17.3	153.08	18	3 8 26.49	19 22 25.1	115.02
19	1 30 6.22	8 41 35.8	152.57	19	3 10 36.12	19 33 55.2	114.11
20	1 32 8.67	8 56 51.2	152.05	20	3 12 45.94	19 45 19.0	113.12
21	1 34 11.20	9 12 3.5	151.52	21	3 14 55.95	19 56 36.3	111.11
22	1 36 13.83	9 27 12.6	150.97	22	3 17 6.16	20 7 47.1	110.11
23	1 38 16.56	9 42 18.4	150.42	23	3 19 16.56	20 18 51.3	109.11
24	1 40 19.38	N. 9 57 20.9		24	3 21 27.14	N. 20 29 48.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 5.				SUNDAY 7.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	3 21 27.14	N.20 29 48.8	108.47	0	5 9 16.98	N.26 49 13.9	45.78
1	3 23 37.93	20 40 39.6	107.35	1	5 11 34.90	26 53 48.6	44.35
2	3 25 48.91	20 51 23.7	106.22	2	5 13 52.88	26 58 14.7	42.90
3	3 28 0.08	21 2 1.0	105.07	3	5 16 10.92	27 2 32.1	41.47
4	3 30 11.45	21 12 31.4	103.90	4	5 18 29.02	27 6 40.9	40.03
5	3 32 23.01	21 22 54.8	102.75	5	5 20 47.16	27 10 41.1	38.57
6	3 34 34.76	21 33 11.3	101.58	6	5 23 5.35	27 14 32.5	37.13
7	3 36 46.70	21 43 20.8	100.38	7	5 25 23.59	27 18 15.3	35.68
8	3 38 58.83	21 53 23.1	99.20	8	5 27 41.85	27 21 49.4	34.23
9	3 41 11.14	22 3 18.3	98.00	9	5 30 0.15	27 25 14.8	32.78
10	3 43 23.65	22 13 6.3	96.78	10	5 32 18.47	27 28 31.5	31.33
11	3 45 36.34	22 22 47.0	95.58	11	5 34 36.81	27 31 39.5	29.88
12	3 47 49.21	22 32 20.5	94.35	12	5 36 55.17	27 34 38.8	28.43
13	3 50 2.27	22 41 46.6	93.12	13	5 39 13.53	27 37 29.4	26.97
14	3 52 15.51	22 51 5.3	91.87	14	5 41 31.90	27 40 11.2	25.52
15	3 54 28.94	23 0 16.5	90.62	15	5 43 50.27	27 42 44.3	24.07
16	3 56 42.54	23 9 20.2	89.37	16	5 46 8.64	27 45 8.7	22.62
17	3 58 56.32	23 18 16.4	88.10	17	5 48 26.99	27 47 24.4	21.15
18	4 1 10.27	23 27 5.0	86.82	18	5 50 45.32	27 49 31.3	19.72
19	4 3 24.40	23 35 45.9	85.55	19	5 53 3.63	27 51 29.6	18.25
20	4 5 38.70	23 44 19.2	84.25	20	5 55 21.92	27 53 19.1	16.80
21	4 7 53.16	23 52 44.7	82.97	21	5 57 40.18	27 54 59.9	15.35
22	4 10 7.80	24 1 2.5	81.65	22	5 59 58.39	27 56 32.0	13.90
23	4 12 22.60	N.24 9 12.4	80.35	23	6 2 16.57	N.27 57 55.4	12.45
SATURDAY 6.				MONDAY 8.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	4 14 37.56	N.24 17 14.5	79.03	0	6 4 34.69	N.27 59 10.1	11.00
1	4 16 52.68	24 25 8.7	77.70	1	6 6 52.76	28 0 16.1	9.57
2	4 19 7.96	24 32 54.9	76.38	2	6 9 10.78	28 1 13.5	8.12
3	4 21 23.39	24 40 33.2	75.03	3	6 11 28.73	28 2 2.2	6.68
4	4 23 38.97	24 48 3.4	73.70	4	6 13 46.61	28 2 42.3	5.23
5	4 25 54.70	24 55 25.6	72.35	5	6 16 4.42	28 3 13.7	3.80
6	4 28 10.57	25 2 39.7	70.98	6	6 18 22.15	28 3 36.5	2.38
7	4 30 26.59	25 9 45.6	69.63	7	6 20 39.80	28 3 50.8	0.93
8	4 32 42.74	25 16 43.4	68.28	8	6 22 57.35	28 3 56.4	0.48
9	4 34 59.03	25 23 33.1	66.88	9	6 25 14.82	28 3 53.5	1.92
10	4 37 15.45	25 30 14.4	65.53	10	6 27 32.18	28 3 42.0	3.33
11	4 39 32.00	25 36 47.6	64.13	11	6 29 49.45	28 3 22.0	4.75
12	4 41 48.67	25 43 12.4	62.73	12	6 32 6.60	28 2 53.5	6.17
13	4 44 5.46	25 49 28.9	61.37	13	6 34 23.64	28 2 16.5	7.57
14	4 46 22.37	25 55 37.1	59.97	14	6 36 40.55	28 1 31.1	8.98
15	4 48 39.39	26 1 36.9	58.57	15	6 38 57.34	28 0 37.2	10.38
16	4 50 56.52	26 7 28.3	57.15	16	6 41 14.01	27 59 34.9	11.78
17	4 53 13.76	26 13 11.2	55.72	17	6 43 30.54	27 58 24.2	13.17
18	4 55 31.10	26 18 45.7	54.28	18	6 45 46.93	27 57 5.2	14.57
19	4 57 48.53	26 24 3.2	52.83	19	6 48 3.18	27 55 37.8	15.97
20	5 0 6.05	26	51.38	20	6 50 19.29	27 54 2.0	17.38
21	5 2 23.66	26	49.93	21	6 52 35.24	27 52 18.0	18.78
22	5 4 41.36	26	48.48	22	6 54 51.04	27 50 25.7	20.08
23	5 6 59.13	26	47.03	23	6 57 6.68	27 48 25.2	21.47
24	5 9 16.98	N.27	45.58	24	6 59 22.16	N.27 46 16.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 9.				THURSDAY 11.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	6 59 22.16	N. 27 46 16.4	22.82	0	8 43 31.94	N. 23 34 39.7	80.3
1	7 1 37.47	27 43 59.5	24.18	1	8 45 36.10	23 26 36.8	81.3
2	7 3 52.61	27 41 34.4	25.55	2	8 47 40.01	23 18 27.9	82.3
3	7 6 7.57	27 39 1.1	26.87	3	8 49 43.66	23 10 12.9	83.3
4	7 8 22.35	27 36 19.9	28.23	4	8 51 47.05	23 1 51.8	84.3
5	7 10 36.95	27 33 30.5	29.55	5	8 53 50.19	22 53 24.8	85.3
6	7 12 51.36	27 30 33.2	30.90	6	8 55 53.08	22 44 51.8	86.3
7	7 15 5.58	27 27 27.8	32.20	7	8 57 55.70	22 36 13.0	87.3
8	7 17 19.61	27 24 14.6	33.53	8	8 59 58.08	22 27 28.4	88.3
9	7 19 33.44	27 20 53.4	34.83	9	9 2 0.21	22 18 37.9	89.3
10	7 21 47.07	27 17 24.4	36.15	10	9 4 2.08	22 9 41.8	90.3
11	7 24 0.49	27 13 47.5	37.45	11	9 6 3.70	22 0 39.9	91.3
12	7 26 13.70	27 10 2.8	38.73	12	9 8 5.08	21 51 32.4	92.3
13	7 28 26.70	27 6 10.4	40.02	13	9 10 6.21	21 42 19.3	93.3
14	7 30 39.49	27 2 10.3	41.30	14	9 12 7.09	21 33 0.6	94.3
15	7 32 52.06	26 58 2.5	42.58	15	9 14 7.73	21 23 36.4	95.3
16	7 35 4.41	26 53 47.0	43.83	16	9 16 8.12	21 14 6.8	96.3
17	7 37 16.54	26 49 24.0	45.10	17	9 18 8.27	21 4 31.8	97.3
18	7 39 28.44	26 44 53.4	46.35	18	9 20 8.19	20 54 51.3	98.3
19	7 41 40.11	26 40 15.3	47.58	19	9 22 7.86	20 45 5.6	99.3
20	7 43 51.55	26 35 29.8	48.83	20	9 24 7.30	20 35 14.6	100.3
21	7 46 2.77	26 30 36.8	50.07	21	9 26 6.51	20 25 18.3	101.3
22	7 48 13.75	26 25 36.4	51.28	22	9 28 5.48	20 15 16.9	101.3
23	7 50 24.49	N. 26 20 28.7	52.50	23	9 30 4.22	N. 20 5 10.3	101.3
WEDNESDAY 10.				FRIDAY 12.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	7 52 34.99	N. 26 15 13.7	53.72	0	9 32 2.73	N. 19 54 58.6	102.7
1	7 54 45.25	26 9 51.4	54.90	1	9 34 1.02	19 44 41.9	103.6
2	7 56 55.28	26 4 22.0	56.12	2	9 35 59.09	19 34 20.1	104.4
3	7 59 5.05	25 58 45.3	57.28	3	9 37 56.94	19 23 53.4	105.2
4	8 1 14.58	25 53 1.6	58.48	4	9 39 54.57	19 13 21.8	106.0
5	8 3 23.87	25 47 10.7	59.65	5	9 41 51.98	19 2 45.3	106.8
6	8 5 32.90	25 41 12.8	60.80	6	9 43 49.18	18 52 4.0	107.6
7	8 7 41.69	25 35 8.0	61.98	7	9 45 46.16	18 41 17.9	108.4
8	8 9 50.22	25 28 56.1	63.12	8	9 47 42.94	18 30 27.0	109.2
9	8 11 58.50	25 22 37.4	64.27	9	9 49 39.51	18 19 31.4	110.0
10	8 14 6.53	25 16 11.8	65.40	10	9 51 35.88	18 8 31.2	110.8
11	8 16 14.30	25 9 39.4	66.52	11	9 53 32.05	17 57 26.4	111.5
12	8 18 21.82	25 3 0.3	67.65	12	9 55 28.02	17 46 17.0	112.3
13	8 20 29.08	24 56 14.4	68.75	13	9 57 23.80	17 35 3.1	113.0
14	8 22 36.09	24 49 21.9	69.87	14	9 59 19.38	17 23 44.7	113.8
15	8 24 42.84	24 42 22.7	70.95	15	10 1 14.78	17 12 21.8	114.5
16	8 26 49.33	24 35 17.0	72.05	16	10 3 9.98	17 0 54.5	115.2
17	8 28 55.56	24 28 4.7	73.13	17	10 5 5.00	16 49 22.9	115.9
18	8 31 1.53	24 20 45.9	74.20	18	10 6 59.84	16 37 47.0	116.7
19	8 33 7.25	24 13 20.7	75.27	19	10 8 54.50	16 26 6.8	117.5
20	8 35 12.70	24 5 49.1	76.33	20	10 10 48.99	16 14 22.4	118.3
21	8 37 17.90	23 58 11.1	77.37	21	10 12 43.30	16 2 33.8	119.1
22	8 39 22.84	23 50 26.9	78.42	22	10 14 37.45	15 50 41.1	120.0
23	8 41 27.52	23 42 36.4	79.45	23	10 16 31.43	15 38 44.8	120.8
24	8 43 31.94	N. 23 34 39.7		24	10 18 25.24	N. 15 26 43.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 13.				MONDAY 15.			
	^h ^m ^s	^o ['] ["]	["]		^h ^m ^s	^o ['] ["]	["]
0	10 18 25.24	N. 15 26 43.4	120.82	0	11 47 31.04	N. 4 44 7.5	144.73
1	10 20 18.90	15 14 38.5	121.47	1	11 49 21.63	4 29 39.1	145.07
2	10 22 12.40	15 2 29.7	122.13	2	11 51 12.25	4 15 8.7	145.38
3	10 24 5.76	14 50 16.9	122.78	3	11 53 2.92	4 0 36.4	145.67
4	10 25 58.96	14 38 0.2	123.42	4	11 54 53.64	3 46 2.4	145.98
5	10 27 52.02	14 25 39.7	124.05	5	11 56 44.41	3 31 26.5	146.27
6	10 29 44.94	14 13 15.4	124.68	6	11 58 35.24	3 16 48.9	146.55
7	10 31 37.72	14 0 47.3	125.30	7	12 0 26.14	3 2 9.6	146.83
8	10 33 30.37	13 48 15.5	125.92	8	12 2 17.10	2 47 28.6	147.08
9	10 35 22.88	13 35 40.0	126.52	9	12 4 8.14	2 32 46.1	147.35
10	10 37 15.27	13 23 0.9	127.12	10	12 5 59.25	2 18 2.0	147.60
11	10 39 7.54	13 10 18.2	127.72	11	12 7 50.45	2 3 16.4	147.83
12	10 40 59.69	12 57 31.9	128.30	12	12 9 41.73	1 48 29.4	148.07
13	10 42 51.72	12 44 42.1	128.88	13	12 11 33.11	1 33 41.0	148.30
14	10 44 43.64	12 31 48.8	129.45	14	12 13 24.58	1 18 51.2	148.50
15	10 46 35.45	12 18 52.1	130.02	15	12 15 16.16	1 4 0.2	148.72
16	10 48 27.16	12 5 52.0	130.57	16	12 17 7.85	0 49 7.9	148.92
17	10 50 18.77	11 52 48.6	131.13	17	12 18 59.64	0 34 14.4	149.10
18	10 52 10.28	11 39 41.8	131.67	18	12 20 51.56	0 19 19.8	149.28
19	10 54 1.70	11 26 31.8	132.20	19	12 22 43.59	N. 0 4 24.1	149.45
20	10 55 53.03	11 13 18.6	132.75	20	12 24 35.75	S. 0 10 32.6	149.63
21	10 57 44.28	11 0 2.1	133.27	21	12 26 28.05	0 25 30.4	149.77
22	10 59 35.44	10 46 42.5	133.77	22	12 28 20.48	0 40 29.0	149.92
23	11 1 26.53	N. 10 33 19.9	134.30	23	12 30 13.05	S. 0 55 28.5	150.05
SUNDAY 14.				TUESDAY 16.			
	^h ^m ^s	^o ['] ["]	["]		^h ^m ^s	^o ['] ["]	["]
0	11 3 17.54	N. 10 19 54.1	134.80	0	12 32 5.76	S. 1 10 28.8	150.18
1	11 5 8.49	10 6 25.3	135.28	1	12 33 58.63	1 25 29.9	150.28
2	11 6 59.37	9 52 53.6	135.78	2	12 35 51.65	1 40 31.6	150.42
3	11 8 50.19	9 39 18.9	136.25	3	12 37 44.84	1 55 34.1	150.50
4	11 10 40.96	9 25 41.4	136.75	4	12 39 38.19	2 10 37.1	150.58
5	11 12 31.67	9 12 0.9	137.20	5	12 41 31.71	2 25 40.6	150.67
6	11 14 22.34	8 58 17.7	137.67	6	12 43 25.41	2 40 44.6	150.73
7	11 16 12.96	8 44 31.7	138.13	7	12 45 19.29	2 55 49.0	150.78
8	11 18 3.54	8 30 42.9	138.57	8	12 47 13.35	3 10 53.7	150.83
9	11 19 54.08	8 16 51.5	139.00	9	12 49 7.61	3 25 58.7	150.87
10	11 21 44.60	8 2 57.5	139.45	10	12 51 2.07	3 41 3.9	150.90
11	11 23 35.09	7 49 0.8	139.87	11	12 52 56.72	3 56 9.3	150.92
12	11 25 25.55	7 35 1.6	140.28	12	12 54 51.58	4 11 14.8	150.92
13	11 27 16.00	7 20 59.9	140.70	13	12 56 46.65	4 26 20.3	150.92
14	11 29 6.44	7 6 55.7	141.12	14	12 58 41.94	4 41 25.8	150.88
15	11 30 56.87	6 52 49.0	141.54	15	13 0 37.45	4 56 31.1	150.87
16	11 32 47.29	6 38 40.0	141.98	16	13 2 33.19	5 11 36.3	150.83
17	11 34 37.71	6 24 28.8	142.42	17	13 4 29.16	5 26 41.3	150.77
18	11 36 28.14	6 10 15.4	142.86	18	13 6 25.37	5 41 45.9	150.72
19	11 38 18.58	5 55 59.9	143.29	19	13 8 21.82	5 56 50.2	150.63
20	11 40 9.03	5 41 49.8	143.73	20	13 10 18.52	6 11 54.0	150.57
21	11 41 59.49	5 27 39.8	144.17	21	13 12 15.47	6 26 57.4	150.45
22	11 43 49.94	5 13 29.8	144.61	22	13 14 12.67	6 42 0.1	150.33
23	11 45 40.39	4 59 19.8	145.05	23	13 16 10.14	6 57 2.1	150.23
24	11 47 31.00	4 45 9.8	145.49	24	13 18 7.89	S. 7 12 3.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 17.				FRIDAY 19.			
0	h m s 13 18 7.89	S. 7 12 3.5	150.08	0	h m s 14 59 8.68	S. 18 31 24.7	126.31
1	13 20 5.90	7 27 4.0	149.95	1	15 1 25.23	18 44 3.0	125.41
2	13 22 4.19	7 42 3.7	149.78	2	15 3 42.26	18 56 35.9	124.51
3	13 24 2.76	7 57 2.4	149.60	3	15 5 59.77	19 9 3.2	123.61
4	13 26 1.62	8 12 0.0	149.43	4	15 8 17.76	19 21 24.8	122.71
5	13 28 0.78	8 26 56.6	149.23	5	15 10 36.23	19 33 40.5	121.81
6	13 30 0.23	8 41 52.0	149.02	6	15 12 55.18	19 45 50.4	120.91
7	13 31 59.99	8 56 46.1	148.78	7	15 15 14.62	19 57 54.2	119.91
8	13 34 0.05	9 11 38.8	148.55	8	15 17 34.55	20 9 51.8	118.91
9	13 36 0.43	9 26 30.1	148.30	9	15 19 54.97	20 21 43.2	117.91
10	13 38 1.12	9 41 19.9	148.05	10	15 22 15.87	20 33 28.2	116.91
11	13 40 2.14	9 56 8.2	147.75	11	15 24 37.26	20 45 6.7	115.91
12	13 42 3.48	10 10 54.7	147.47	12	15 26 59.15	20 56 38.5	114.91
13	13 44 5.16	10 25 39.5	147.15	13	15 29 21.52	21 8 3.6	113.91
14	13 46 7.17	10 40 22.4	146.83	14	15 31 44.39	21 19 21.9	112.91
15	13 48 9.53	10 55 3.4	146.50	15	15 34 7.74	21 30 33.1	111.91
16	13 50 12.23	11 9 42.4	146.15	16	15 36 31.58	21 41 37.3	109.91
17	13 52 15.29	11 24 19.3	145.78	17	15 38 55.92	21 52 34.2	108.91
18	13 54 18.70	11 38 54.0	145.42	18	15 41 20.75	22 3 23.8	107.91
19	13 56 22.48	11 53 26.5	145.00	19	15 43 46.06	22 14 5.9	105.91
20	13 58 26.62	12 7 56.5	144.60	20	15 46 11.86	22 24 40.4	104.91
21	14 0 31.13	12 22 24.1	144.18	21	15 48 38.16	22 35 7.2	103.91
22	14 2 36.02	12 36 49.2	143.73	22	15 51 4.93	22 45 26.2	101.91
23	14 4 41.29	S. 12 51 11.6	143.28	23	15 53 32.19	S. 22 55 37.3	100.91
THURSDAY 18.				SATURDAY 20.			
0	h m s 14 6 46.93	S. 13 5 31.3	142.82	0	h m s 15 55 59.93	S. 23 5 40.3	99.91
1	14 8 52.97	13 19 48.2	142.33	1	15 58 28.16	23 15 35.1	97.91
2	14 10 59.40	13 34 2.2	141.82	2	16 0 56.87	23 25 21.7	96.91
3	14 13 6.24	13 48 13.1	141.30	3	16 3 26.06	23 34 59.8	94.91
4	14 15 13.47	14 2 20.9	140.77	4	16 5 55.73	23 44 29.4	93.91
5	14 17 21.12	14 16 25.5	140.22	5	16 8 25.86	23 53 50.4	92.91
6	14 19 29.17	14 30 26.8	139.65	6	16 10 56.46	24 3 2.6	90.91
7	14 21 37.64	14 44 24.7	139.07	7	16 13 27.53	24 12 5.9	89.91
8	14 23 46.52	14 58 19.1	138.45	8	16 15 59.05	24 21 0.3	87.91
9	14 25 55.83	15 12 9.8	137.83	9	16 18 31.03	24 29 45.6	86.91
10	14 28 5.57	15 25 56.8	137.20	10	16 21 3.47	24 38 21.7	84.91
11	14 30 15.74	15 39 40.0	136.55	11	16 23 36.35	24 46 48.4	82.91
12	14 32 26.34	15 53 19.3	135.87	12	16 26 9.67	24 55 5.8	81.91
13	14 34 37.38	16 6 54.5	135.18	13	16 28 43.43	25 3 13.6	79.91
14	14 36 48.85	16 20 25.6	134.47	14	16 31 17.63	25 11 11.8	78.91
15	14 39 0.78	16 33 52.4	133.75	15	16 33 52.25	25 19 0.3	76.91
16	14 41 13.16	16 47 14.9	133.00	16	16 36 27.30	25 26 38.9	74.91
17	14 43 25.98	17 0 32.9	132.23	17	16 39 2.76	25 34 7.6	73.91
18	14 45 39.26	17 13 46.3	131.47	18	16 41 38.63	25 41 26.2	71.91
19	14 47 53.00	17 26 55.1	130.65	19	16 44 14.90	25 48 34.7	69.91
20	14 50 7.21	17 39 59.0	129.85	20	16 46 51.57	25 55 3.1	67.91
21	14 52 21.87	17 52 58.1	129.00	21	16 49 28.63	26 2 8	65.91
22	14 54 37.00	18 5 52.1	128.15	22	16 52 6.07	26 8 8	63.91
23	14 56 52.60	18 18 41.0	127.28	23	16 54 43.89	26 15 15	61.91
24	14 59 8.68	S. 18 31 24.7		24	16 57 22.07	S. 26 27	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 21.				TUESDAY 23.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	16 57 22.07	S. 26 21 41.5	60.93	0	19 7 49.78	S. 27 34 22.4	34.22
1	17 0 0.62	26 27 47.1	59.13	1	19 10 33.03	27 30 57.1	36.20
2	17 2 39.53	26 33 41.9	57.33	2	19 13 16.09	27 27 19.9	38.17
3	17 5 18.78	26 39 25.9	55.48	3	19 15 58.95	27 23 30.9	40.13
4	17 7 58.36	26 44 58.8	53.65	4	19 18 41.60	27 19 30.1	42.10
5	17 10 38.27	26 50 20.7	51.80	5	19 21 24.03	27 15 17.5	44.03
6	17 13 18.49	26 55 31.5	49.93	6	19 24 6.23	27 10 53.3	45.97
7	17 15 59.02	27 0 31.1	48.05	7	19 26 48.19	27 6 17.5	47.90
8	17 18 39.85	27 5 19.4	46.15	8	19 29 29.89	27 1 30.1	49.80
9	17 21 20.97	27 9 56.3	44.25	9	19 32 11.35	26 56 31.3	51.72
10	17 24 2.36	27 14 21.8	42.33	10	19 34 52.52	26 51 21.0	53.62
11	17 26 44.03	27 18 35.8	40.40	11	19 37 33.41	26 45 59.3	55.48
12	17 29 25.95	27 22 38.2	38.47	12	19 40 14.01	26 40 26.4	57.35
13	17 32 8.12	27 26 29.0	36.50	13	19 42 54.31	26 34 42.3	59.22
14	17 34 50.53	27 30 8.0	34.57	14	19 45 34.31	26 28 47.0	61.05
15	17 37 33.16	27 33 35.4	32.58	15	19 48 13.98	26 22 40.7	62.87
16	17 40 16.00	27 36 50.9	30.62	16	19 50 53.34	26 16 23.5	64.70
17	17 42 59.05	27 39 54.6	28.62	17	19 53 32.37	26 9 55.3	66.48
18	17 45 42.29	27 42 46.3	26.65	18	19 56 11.06	26 3 16.4	68.28
19	17 48 25.72	27 45 26.2	24.63	19	19 58 49.40	25 56 26.7	70.05
20	17 51 9.31	27 47 54.0	22.63	20	20 1 27.39	25 49 26.4	71.82
21	17 53 53.06	27 50 9.8	20.62	21	20 4 5.03	25 42 15.5	73.55
22	17 56 36.96	27 52 13.5	18.60	22	20 6 42.30	25 34 54.2	75.27
23	17 59 20.99	S. 27 54 5.1	16.58	23	20 9 19.20	S. 25 27 22.6	77.00
MONDAY 22.				WEDNESDAY 24.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	18 2 5.15	S. 27 55 44.6	14.55	0	20 11 55.72	S. 25 19 40.6	78.68
1	18 4 49.42	27 57 11.9	12.52	1	20 14 31.86	25 11 48.5	80.37
2	18 7 33.79	27 58 27.0	10.48	2	20 17 7.61	25 3 46.3	82.03
3	18 10 18.24	27 59 29.9	8.43	3	20 19 42.97	24 55 34.1	83.67
4	18 13 2.77	28 0 20.5	6.42	4	20 22 17.92	24 47 12.1	85.32
5	18 15 47.36	28 0 59.0	4.35	5	20 24 52.48	24 38 40.2	86.92
6	18 18 32.00	28 1 25.1	2.32	6	20 27 26.63	24 29 58.7	88.50
7	18 21 16.67	28 1 39.0	0.27	7	20 30 0.36	24 21 7.7	90.10
8	18 24 1.37	28 1 40.6	1.78	8	20 32 33.67	24 12 7.1	91.65
9	18 26 46.08	28 1 29.9	3.83	9	20 35 6.57	24 2 57.2	93.20
10	18 29 30.79	28 1 6.9	5.87	10	20 37 39.04	23 53 38.0	94.72
11	18 32 15.48	28 0 31.7	7.92	11	20 40 11.09	23 44 9.7	96.23
12	18 35 0.15	27 59 44.2	9.97	12	20 42 42.70	23 34 32.3	97.72
13	18 37 44.78	27 58 44.4	12.00	13	20 45 13.87	23 24 46.0	99.18
14	18 40 29.36	27 57 32.4	14.05	14	20 47 44.61	23 14 50.9	100.65
15	18 43 13.87	27 56 8.1	16.10	15	20 50 14.91	23 4 47.0	102.08
16	18 45 58.31	27 54 31.5	18.12	16	20 52 44.77	22 54 34.5	103.48
17	18 48 42.67	27 52 42.8	20.15	17	20 55 14.19	22 44 13.6	104.90
18	18 51 26.93	27 50 11.9	22.17	18	20 57 43.16	22 33 44.2	106.27
19	18 54 11.20	27 47 38.9	24.20	19	21 0 11.69	22 23 6.6	107.63
20	18 56 55.47	27 45 5.7	26.22	20	21 2 39.78	22 12 20.8	108.98
21	18 59 39.74	27 43 14.4	28.22	21	21 5 7.41	22 1 26.9	110.30
22	19 2 24.01	27 40 38.9	30.24	22	21 7 34.61	21 50 25.1	111.62
23	19 5 8.28	27 38 5.1	32.26	23	21 10 1.35	21 39 15.4	112.90
24	19 8 2.55	27 36 11.3	34.27	24	21 12 27.65	S. 21 27 58.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 25.				SATURDAY 27.			
0	^h 21 ^m 12 ^s 27.65	S. 21° 27' 58".0	114.17	0	^h 23 ^m 1 ^s 18.69	S. 10° 30' 36".4	159
1	21 14 53.50	21 16 33.0	115.42	1	23 3 25.92	10 15 13.2	159
2	21 17 18.90	21 5 0.5	116.65	2	23 5 32.86	9 59 47.5	159
3	21 19 43.86	20 53 20.6	117.87	3	23 7 39.52	9 44 19.4	159
4	21 22 8.37	20 41 33.4	119.05	4	23 9 45.91	9 28 48.9	159
5	21 24 32.43	20 29 39.1	120.23	5	23 11 52.03	9 13 16.2	159
6	21 26 56.05	20 17 37.7	121.38	6	23 13 57.88	8 57 41.3	159
7	21 29 19.22	20 5 29.4	122.53	7	23 16 3.47	8 42 4.4	159
8	21 31 41.95	19 53 14.2	123.63	8	23 18 8.81	8 26 25.5	159
9	21 34 4.23	19 40 52.4	124.75	9	23 20 13.90	8 10 44.8	159
10	21 36 26.08	19 28 23.9	125.82	10	23 22 18.75	7 55 2.2	159
11	21 38 47.49	19 15 49.0	126.90	11	23 24 23.36	7 39 17.9	159
12	21 41 8.45	19 3 7.6	127.93	12	23 26 27.74	7 23 32.0	159
13	21 43 28.98	18 50 20.0	128.97	13	23 28 31.89	7 7 44.6	159
14	21 45 49.08	18 37 26.2	129.97	14	23 30 35.82	6 51 55.7	159
15	21 48 8.74	18 24 26.4	130.95	15	23 32 39.52	6 36 5.5	159
16	21 50 27.98	18 11 20.7	131.93	16	23 34 43.02	6 20 14.0	159
17	21 52 46.79	17 58 9.1	132.88	17	23 36 46.32	6 4 21.2	159
18	21 55 5.18	17 44 51.8	133.82	18	23 38 49.41	5 48 27.4	159
19	21 57 23.15	17 31 28.9	134.73	19	23 40 52.31	5 32 32.5	159
20	21 59 40.70	17 18 0.5	135.63	20	23 42 55.02	5 16 36.6	159
21	22 1 57.84	17 4 26.7	136.50	21	23 44 57.54	5 0 39.9	159
22	22 4 14.57	16 50 47.7	137.38	22	23 46 59.89	4 44 42.3	159
23	22 6 30.90	S. 16° 37' 3".4	138.22	23	23 49 2.07	S. 4° 28' 44.0	159
FRIDAY 26.				SUNDAY 28.			
0	22 8 46.82	S. 16° 23' 14".1	139.05	0	23 51 4.08	S. 4° 12' 45.1	159
1	22 11 2.34	16 9 19.8	139.85	1	23 53 5.93	3 56 45.6	160
2	22 13 17.47	15 55 20.7	140.67	2	23 55 7.62	3 40 45.6	160
3	22 15 32.21	15 41 16.7	141.42	3	23 57 9.16	3 24 45.1	160
4	22 17 46.56	15 27 8.2	142.18	4	23 59 10.55	3 8 44.4	160
5	22 20 0.52	15 12 55.1	142.93	5	0 1 11.81	2 52 43.4	160
6	22 22 14.11	14 58 37.5	143.65	6	0 3 12.93	2 36 42.2	160
7	22 24 27.32	14 44 15.6	144.35	7	0 5 13.91	2 20 40.9	160
8	22 26 40.15	14 29 49.5	145.03	8	0 7 14.78	2 4 39.6	160
9	22 28 52.62	14 15 19.3	145.72	9	0 9 15.52	1 48 38.3	160
10	22 31 4.73	14 0 45.0	146.37	10	0 11 16.16	1 32 37.2	160
11	22 33 16.48	13 46 6.8	147.02	11	0 13 16.68	1 16 36.3	160
12	22 35 27.87	13 31 24.7	147.63	12	0 15 17.11	1 0 35.6	160
13	22 37 38.91	13 16 38.9	148.23	13	0 17 17.43	0 44 35.3	159
14	22 39 49.61	13 1 49.5	148.82	14	0 19 17.67	0 28 35.5	159
15	22 41 59.97	12 46 56.6	149.40	15	0 21 17.81	S. 0° 12' 36.1	159
16	22 44 9.99	12 32 0.2	149.95	16	0 23 17.87	N. 0° 3' 22.6	159
17	22 46 19.68	12 17 0.5	150.50	17	0 25 17.86	0 19 20.8	159
18	22 48 29.05	12 1 57.5	151.03	18	0 27 17.77	0 35 18.2	159
19	22 50 38.10	11 46 51.3	151.53	19	0 29 17.62	0 51 14.9	159
20	22 52 46.83	11 31 42.1	152.03	20	0 31 17.41	1 7	159
21	22 54 55.25	11 16 29.9	152.52	21	0 33 17.14	1 21	159
22	22 57 3.36	11 1 14.8	152.97	22	0 35 16.82	1 3	159
23	22 59 11.17	10 45 57.0	153.43	23	0 37 16.45		159
24	23 1 18.69	S. 10° 30' 36".4		24	0 39 16.01		159

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>MONDAY 29.</i>				<i>WEDNESDAY 31.</i>			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	0 39 16.04	N. 2 10 43.5	158.40	0	2 15 39.87	N. 14 6 56.5	135.23
1	0 41 15.60	2 26 33.9	158.18	1	2 17 42.97	14 20 27.9	134.48
2	0 43 15.12	2 42 23.0	157.97	2	2 19 46.23	14 33 54.8	133.72
3	0 45 14.63	2 58 10.8	157.72	3	2 21 49.66	14 47 17.1	132.93
4	0 47 14.11	3 13 57.1	157.47	4	2 23 53.26	15 0 34.7	132.15
5	0 49 13.57	3 29 41.9	157.22	5	2 25 57.04	15 13 47.6	131.35
6	0 51 13.02	3 45 25.2	156.93	6	2 28 0.99	15 26 55.7	130.53
7	0 53 12.47	4 1 6.8	156.65	7	2 30 5.11	15 39 58.9	129.73
8	0 55 11.92	4 16 46.7	156.35	8	2 32 9.42	15 52 57.3	128.88
9	0 57 11.37	4 32 24.8	156.05	9	2 34 13.91	16 5 50.6	128.05
10	0 59 10.82	4 48 1.1	155.72	10	2 36 18.58	16 18 38.9	127.20
11	1 1 10.29	5 3 35.4	155.40	11	2 38 23.44	16 31 22.1	126.33
12	1 3 9.78	5 19 7.8	155.05	12	2 40 28.49	16 44 0.1	125.47
13	1 5 9.29	5 34 38.1	154.70	13	2 42 33.73	16 56 32.9	124.57
14	1 7 8.83	5 50 6.3	154.32	14	2 44 39.16	17 9 0.3	123.68
15	1 9 8.40	6 5 32.2	153.95	15	2 46 44.79	17 21 22.4	122.77
16	1 11 8.00	6 20 55.9	153.57	16	2 48 50.61	17 33 39.0	121.87
17	1 13 7.65	6 36 17.3	153.17	17	2 50 56.63	17 45 50.2	120.93
18	1 15 7.34	6 51 36.3	152.75	18	2 53 2.86	17 57 55.8	120.00
19	1 17 7.08	7 6 52.8	152.32	19	2 55 9.28	18 9 55.8	119.05
20	1 19 6.88	7 22 6.7	151.90	20	2 57 15.91	18 21 50.1	118.10
21	1 21 6.74	7 37 18.1	151.45	21	2 59 22.74	18 33 38.7	117.13
22	1 23 6.66	7 52 26.8	150.98	22	3 1 29.78	18 45 21.5	116.15
23	1 25 6.64	N. 8 7 32.7	150.53	23	3 3 37.02	N. 18 56 58.4	115.17
<i>TUESDAY 30.</i>				<i>THURSDAY, JUNE 1.</i>			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	1 27 6.70	N. 8 22 35.9	150.05	0	3 5 44.47	N. 19 8 29.4	
1	1 29 6.83	8 37 36.2	149.55				
2	1 31 7.05	8 52 33.5	149.05				
3	1 33 7.34	9 7 27.8	148.55				
4	1 35 7.73	9 22 19.1	148.02				
5	1 37 8.21	9 37 7.2	147.48				
6	1 39 8.78	9 51 52.1	146.93				
7	1 41 9.46	10 6 33.7	146.38				
8	1 43 10.24	10 21 12.0	145.80				
9	1 45 11.13	10 35 46.8	145.25				
10	1 47 12.13	10 50 18.3	144.63				
11	1 49 13.24	11 4 46.1	144.05				
12	1 51 14.48	11 19 10.4	143.43				
13	1 53 15.84	11 33 31.0	142.82				
14	1 55 17.32	11 47 47.9	142.17				
15	1 57 18.94	12 2 0.9	141.53				
16	1 59 20.68	12 16 10.1	140.88				
17	2 1 22.57	12 30 15.4	140.22				
18	2 3 24.59	12 44 16.7	139.53				
	26.76	12 58 13.9	138.83				
	1.08	13 12 6.9	138.15				
	54	13 25 55.8	137.43				
	16	13 39 40.4	136.70				
		13 53 20.6	135.98				
		6 56.5					

PHASES OF THE MOON.

● New Moon	- - -	^d ^h ^m	4 7 1.6
☾ First Quarter	- - -	12 5 38.8	
○ Full Moon	- - -	19 19 27.9	
☾ Last Quarter	- - -	26 12 1.3	

☾ Apogee	- - - - -	^d ^h	11 0
☾ Perigee	- - - - -		22 23

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
1	α Aquilæ W.	65 44 34	3431	67 6 16	3410	68 28 21	3392	69 50 47	3373
	Fomalhaut W.	32 47 55	3049	34 17 7	2998	35 47 22	2955	37 18 31	2913
	SUN E.	41 24 41	2695	39 47 55	2702	38 11 18	2708	36 34 49	2716
2	α Aquilæ W.	76 46 40	3329	78 10 18	3325	79 34 1	3324	80 57 45	3323
	Fomalhaut W.	45 3 52	2804	46 38 14	2791	48 12 53	2781	49 47 46	2773
6	Pollux E.	44 50 4	2768	43 14 54	2780	41 40 0	2792	40 5 22	2804
	Jupiter E.	63 33 1	2813	61 58 50	2825	60 24 55	2838	58 51 17	2851
	Mars E.	72 35 13	2910	71 3 7	2923	69 31 17	2936	67 59 44	2948
	Regulus E.	81 26 50	2778	79 51 53	2789	78 17 11	2801	76 42 45	2813
7	SUN W.	32 12 42	3211	33 38 38	3224	35 4 19	3235	36 29 47	3246
	Pollux E.	32 16 4	2863	30 42 58	2874	29 10 6	2887	27 37 30	2899
	Jupiter E.	51 7 6	2913	49 35 4	2925	48 3 17	2937	46 31 45	2950
	Mars E.	60 25 49	3010	58 55 48	3022	57 26 3	3034	55 56 32	3045
	Regulus E.	68 54 23	2872	67 21 28	2884	65 48 48	2895	64 16 23	2903
8	SUN W.	43 33 47	3301	44 57 57	3311	46 21 56	3321	47 45 43	3331
	Jupiter E.	38 57 57	3010	37 27 56	3022	35 58 11	3034	34 28 41	3046
	Mars E.	48 32 28	3101	47 4 20	3112	45 36 25	3123	44 8 43	3133
	Regulus E.	56 37 45	2958	55 6 40	2969	53 35 48	2979	52 5 9	2989
9	SUN W.	54 41 57	3374	56 4 43	3381	57 27 21	3389	58 49 50	3395
	Jupiter E.	27 4 55	3109	25 36 57	3124	24 9 17	3139	22 41 55	3157
	Mars E.	36 53 10	3180	35 26 37	3188	34 0 14	3198	32 34 2	3206
	Regulus E.	44 34 53	3035	43 5 23	3043	41 36 3	3051	40 6 54	3059
	Saturn E.	119 54 26	2993	118 24 5	3001	116 53 53	3007	115 23 49	3013
10	SUN W.	65 40 32	3423	67 2 22	3427	68 24 8	3430	69 45 51	3434
	Mars E.	25 25 30	3248	24 0 17	3256	22 35 14	3265	21 10 22	3275
	Regulus E.	32 43 30	3097	31 15 17	3105	29 47 13	3112	28 19 18	3120
	Spica π E.	86 38 16	3060	85 9 17	3064	83 40 23	3067	82 11 33	3070
	Saturn E.	107 55 10	3037	106 25 43	3040	104 56 20	3043	103 27 1	3046
11	SUN W.	76 33 41	3442	77 55 10	3442	79 16 39	3441	80 38 9	3440
	Pollux W.	16 3 12	3090	17 31 34	3087	18 59 59	3084	20 28 27	3082
	Spica π E.	74 48 7	3078	73 19 30	3078	71 50 53	3078	70 22 16	3077
	Saturn E.	96 1 7	3053	94 32 0	3054	93 2 54	3053	91 33 47	3052
12	SUN W.	87 26 5	3428	88 47 50	3424	90 9 39	3420	91 31 33	3414
	Pollux W.	27 51 41	3065	29 20 33	3061	30 49 30	3056	32 18 33	3051
	Spica π E.	62 58 48	3066	61 29 57	3062	60 1 1	3059	58 32 1	3054
	Saturn E.	84 7 45	3041	82 38 23	3038	81 8 57	3033	79 39 25	3028
	Antares E.	108 51 12	3060	107 22 14	3056	105 53 11	3053	104 24 4	3048
13	SUN W.	98 22 47	3381	99 45 25	3373	101 8 12	3365	102 31 9	3355
	Pollux W.	39 45 33	3019	41 15 22	3012	42 45 20	3003	44 15 29	2994
	Jupiter W.	20 47 37	3150	22 14 46	3131	23 42 18	3114	25 10 11	3098
	Spica π E.	51 5 26	3025	49 35 44	3018	48 5 54	3010	46 35 54	3003
	Saturn E.	72 10 8	2999	70 39 54	2991	69 9 30	2984	67 38 57	2979
	Antares E.	96 56 45	3017	95 26 53	3009	93 56 52	3001	92 26 41	2992
14	SUN W.	109 28 44	3303	110 52 52	3291	112 17 14	3279	113 41 50	3267
	Pollux W.	51 49 5	2946	53 20 26	2934	54 52 2	2923	56 23 52	2911

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
1	α Aquilæ W.	71 13 32	3362	72 36 32	3351	73 59 45	3342	75 23 8	3334
	Fomalhaut W.	38 50 27	2887	40 23 3	2861	41 56 12	2839	43 29 50	2820
	SUN E.	34 58 30	2723	33 22 20	2730	31 46 20	2738	30 10 30	2745
2	α Aquilæ W.	82 21 30	3324	83 45 14	3327	85 8 54	3332	86 32 29	3338
	Fomalhaut W.	51 22 49	2767	52 58 0	2762	54 33 18	2758	56 8 41	2755
6	Pollux E.	38 31 0	2816	36 56 53	2828	35 23 1	2840	33 49 25	2852
	Jupiter E.	57 17 55	2863	55 44 49	2876	54 11 59	2888	52 39 25	2900
	Mars E.	66 28 26	2961	64 57 24	2973	63 26 37	2985	61 56 5	2997
	Regulus E.	75 8 34	2825	73 34 39	2836	72 0 58	2848	70 27 33	2860
7	SUN W.	37 55 2	3258	39 20 3	3270	40 44 50	3280	42 9 25	3291
	Pollux E.	26 5 10	2910	24 33 4	2921	23 1 12	2932	21 29 34	2943
	Jupiter E.	45 0 29	2962	43 29 28	2974	41 58 43	2985	40 28 12	2998
	Mars E.	54 27 15	3057	52 58 13	3068	51 29 24	3079	50 0 49	3091
	Regulus E.	62 44 11	2916	61 12 13	2923	59 40 30	2939	58 9 1	2949
8	SUN W.	49 9 18	3340	50 32 43	3349	51 55 58	3358	53 19 2	3366
	Jupiter E.	32 59 25	3058	31 30 24	3071	30 1 39	3083	28 33 9	3096
	Mars E.	42 41 13	3143	41 13 55	3152	39 46 48	3162	38 19 53	3172
	Regulus E.	50 34 43	2999	49 4 29	3008	47 34 26	3017	46 4 34	3026
9	SUN W.	60 12 12	3401	61 34 27	3408	62 56 34	3413	64 18 36	3418
	Jupiter E.	21 14 54	3176	19 48 16	3197	18 22 3	3222	16 56 20	3253
	Mars E.	31 8 0	3214	29 42 8	3222	28 16 25	3231	26 50 53	3239
	Regulus E.	38 37 54	3067	37 9 4	3074	35 40 23	3082	34 11 52	3090
	Saturn E.	113 53 52	3018	112 24 2	3024	110 54 19	3029	109 24 42	3033
10	SUN W.	71 7 29	3436	72 29 5	3438	73 50 38	3439	75 12 10	3440
	Mars E.	19 45 41	3286	18 21 13	3298	16 56 59	3313	15 33 3	3333
	Regulus E.	26 51 33	3129	25 23 59	3138	23 56 35	3148	22 29 24	3159
	Spica π E.	80 42 47	3073	79 14 4	3074	77 45 23	3076	76 16 44	3078
	Saturn E.	101 57 45	3049	100 28 33	3051	98 59 23	3052	97 30 14	3053
11	SUN W.	81 59 40	3439	83 21 12	3437	84 42 47	3435	86 4 24	3431
	Pollux W.	21 56 58	3079	23 25 33	3077	24 54 11	3073	26 22 54	3069
	Spica π E.	68 53 38	3076	67 24 59	3074	65 56 18	3073	64 27 35	3070
	Saturn E.	90 4 39	3051	88 35 30	3049	87 6 18	3047	85 37 3	3044
12	SUN W.	92 53 34	3408	94 15 41	3402	95 37 55	3395	97 0 17	3388
	Pollux W.	33 47 42	3046	35 16 58	3040	36 46 21	3033	38 15 53	3026
	Spica π E.	57 2 55	3049	55 33 43	3044	54 4 25	3038	52 34 59	3032
	Saturn E.	78 9 47	3023	76 40 3	3018	75 10 12	3012	73 40 14	3006
	Antares E.	102 54 50	3043	101 25 30	3036	99 56 2	3031	98 26 28	3024
13	SUN W.	103 54 17	3345	105 17 36	3335	106 41 7	3325	108 4 49	3314
	Pollux W.	45 45 49	2985	47 16 20	2976	48 47 3	2967	50 17 57	2956
	Jupiter W.	26 38 23	3083	25 54 54	3068	29 35 43	3053	31 4 50	3039
	Spica π E.	45 5 45	2985	44 54 54	2985	42 4 54	2977	40 34 12	2968
	Saturn E.	66 8 13	2985	65 54 54	2985	63 6 13	2949	61 34 56	2939
	Antares E.	90 56 19	2985	89 56 19	2985	87 55 2	2966	86 24 6	2955
14	W.	115 6 41				17 57 9	3226	119 22 47	3213
	W.	57 55 1				0 52	2874	62 33 44	2861

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
14	Jupiter W.	32 34 14	3025	34 3 56	3011	35 33 55	2997	37 4 12	2983
	Mars W.	20 57 54	3150	22 25 3	3132	23 52 34	3116	25 20 24	3100
	Regulus W.	15 45 44	3096	17 13 58	3061	18 42 55	3031	20 12 29	3006
	Spica η E.	39 3 19	2958	37 32 13	2948	36 0 55	2938	34 29 24	2928
	Saturn E.	60 3 26	2929	58 31 44	2918	56 59 48	2908	55 27 39	2898
	Antares E.	84 52 57	2944	83 21 34	2934	81 49 58	2922	80 18 7	2912
15	SUN W.	120 48 41	3199	122 14 52	3184	123 41 20	3168	125 8 7	3153
	Pollux W.	64 6 53	2848	65 40 19	2835	67 14 2	2820	68 48 4	2807
	Jupiter W.	44 40 3	2911	46 12 8	2896	47 44 32	2881	49 17 15	2866
	Mars W.	32 44 22	3023	34 14 6	3007	35 44 10	2991	37 14 34	2976
	Regulus W.	27 47 47	2899	29 20 7	2880	30 52 52	2862	32 26 0	2844
	Saturn E.	47 43 11	2837	46 9 31	2824	44 35 34	2811	43 1 20	2798
16	Antares E.	72 35 3	2848	71 1 37	2834	69 27 53	2820	67 53 51	2806
	Pollux W.	76 42 55	2732	78 18 52	2717	79 55 9	2701	81 31 47	2686
	Jupiter W.	57 5 48	2788	58 40 32	2772	60 15 36	2756	61 51 2	2740
	Mars W.	44 51 29	2895	46 23 54	2880	47 56 39	2863	49 29 45	2847
	Regulus W.	40 17 16	2759	41 52 38	2741	43 28 23	2725	45 4 30	2709
	Saturn E.	35 5 58	2733	33 30 2	2720	31 53 49	2708	30 17 20	2695
17	Antares E.	59 59 0	2732	58 23 3	2718	56 46 47	2702	55 10 10	2688
	α Aquilæ E.	107 40 2	3672	106 22 45	3640	105 4 54	3611	103 46 32	3579
	Jupiter W.	69 53 27	2660	71 31 1	2643	73 8 57	2627	74 47 15	2611
	Mars W.	57 20 35	2764	58 55 50	2748	60 31 26	2731	62 7 24	2715
	Regulus W.	53 10 43	2624	54 49 5	2607	56 27 50	2591	58 6 57	2575
	Saturn E.	22 11 5	2647	20 33 14	2643	18 55 17	2641	17 17 17	2639
18	Antares E.	47 1 52	2609	45 23 9	2593	43 44 4	2578	42 4 39	2563
	α Aquilæ E.	97 7 29	3462	95 46 22	3440	94 24 51	3421	93 2 58	3402
	Jupiter W.	83 4 3	2534	84 44 29	2520	86 25 15	2505	88 6 22	2490
	Mars W.	70 12 36	2636	71 50 42	2621	73 29 9	2606	75 7 56	2591
	Regulus W.	66 28 1	2496	68 9 20	2482	69 50 59	2466	71 33 0	2451
	Antares E.	33 42 15	2487	32 0 44	2473	30 18 53	2459	28 36 42	2445
19	α Aquilæ E.	86 8 51	3331	84 45 15	3320	83 21 27	3312	81 57 29	3303
	Jupiter W.	96 36 55	2422	98 19 59	2409	100 3 21	2396	101 47 1	2383
	Mars W.	83 26 54	2520	85 7 39	2507	86 48 42	2494	88 30 3	2481
	Regulus W.	80 8 8	2383	81 52 7	2370	83 36 25	2356	85 21 3	2343
	Spica η W.	26 6 28	2401	27 50 2	2382	29 34 2	2367	31 18 24	2353
	Antares E.	20 1 6	2383	18 17 7	2373	16 32 54	2364	14 48 28	2355
20	α Aquilæ E.	74 56 14	3295	73 31 57	3299	72 7 44	3305	70 43 38	3311
	Jupiter W.	110 29 25	2331	112 14 39	2322	114 0 6	2313	115 45 46	2304
	Mars W.	97 0 57	2427	98 43 54	2417	100 27 5	2407	102 10 29	2397
	Spica η W.	40 5 3	2291	41 51 15	2281	43 37 42	2271	45 24 24	2261
	Saturn W.	19 42 17	2326	21 27 38	2307	23 13 28	2290	24 59 42	2273
	α Aquilæ E.	63 46 48	3402	62 24 33	3429	61 2 49	3461	59 41 41	3493
21	Fomalhaut E.	88 56 24	2463	87 14 18	2454	85 32 0	2446	83 49 3	2438
	Mars W.	110 50 23	2362	112 34 52	2357	114 19 29	2351	116 4 14	2345
	Spica η W.	54 21 7	2223	56 9 1	2216	57 57 5	2210	59 45 1	2204
	Saturn W.	33 55 47	2219	35 43 46	2211	37 31 57	2204	39 20 1	2197
	Fomalhaut E.	75 14 49	2414	73 31 34	2412	71 48 16	2410	70 4	2408

MEAN TIME.
LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^b .	P. L. of diff.	XVIII ^b .	P. L. of diff.	XXI ^b .	P. L. of diff.
		° ' "		° ' "		° ' "		° ' "	
14	Jupiter W.	38 34 46	2969	40 5 38	2954	41 36 48	2940	43 8 16	2925
	Mars W.	26 48 34	3084	28 17 3	3069	29 45 50	3053	31 14 57	3038
	Regulus W.	21 42 36	2981	23 13 13	2958	24 44 19	2937	26 15 51	2918
	Spica $\pi\gamma$ E.	32 57 41	2917	31 25 44	2907	29 53 34	2896	28 21 10	2885
	Saturn E.	53 55 15	2885	52 22 37	2873	50 49 44	2861	49 16 35	2849
	Antares E.	78 46 2	2898	77 13 41	2886	75 41 5	2873	74 8 12	2861
15	SUN W.	126 35 11	3139	128 2 33	3123	- - -	- - -	- - -	- - -
	Pollux W.	70 22 24	2791	71 57 3	2777	73 32 1	2763	75 7 18	2747
	Jupiter W.	50 50 18	2850	52 23 41	2835	53 57 23	2820	55 31 25	2804
	Mars W.	38 45 17	2960	40 16 20	2944	41 47 43	2928	43 19 26	2912
	Regulus W.	33 59 30	2827	35 33 23	2810	37 7 38	2792	38 42 16	2775
	Saturn E.	41 26 50	2785	39 52 3	2772	38 16 59	2759	36 41 37	2746
	Antares E.	66 19 31	2791	64 44 52	2777	63 9 54	2763	61 34 37	2747
16	Pollux W.	83 8 46	2671	84 46 5	2655	86 23 46	2639	88 1 48	2623
	Jupiter W.	63 26 48	2725	65 2 55	2708	66 39 24	2692	68 16 15	2676
	Mars W.	51 3 12	2830	52 37 1	2814	54 11 11	2798	55 45 42	2781
	Regulus W.	46 41 0	2691	48 17 52	2674	49 55 7	2657	51 32 44	2641
	Saturn E.	28 40 34	2684	27 3 32	2673	25 26 16	2663	23 48 46	2654
	Antares E.	53 33 12	2671	51 55 53	2656	50 18 14	2641	48 40 14	2624
	α Aquilæ E.	102 27 40	3557	101 8 19	3531	99 48 29	3506	98 28 12	3483
17	Jupiter W.	76 25 54	2596	78 4 54	2580	79 44 16	2565	81 23 59	2550
	Mars W.	63 43 44	2699	65 20 25	2683	66 57 27	2667	68 34 51	2652
	Regulus W.	59 46 25	2560	61 26 15	2544	63 6 27	2527	64 47 3	2511
	Saturn E.	15 39 21	2653	14 1 38	2673	- - -	- - -	- - -	- - -
	Antares E.	40 24 52	2547	38 44 44	2532	37 4 15	2517	35 23 25	2502
	α Aquilæ E.	91 40 45	3386	90 18 12	3370	88 55 21	3355	87 32 13	3343
18	Jupiter W.	89 47 49	2476	91 29 36	2462	93 11 43	2448	94 54 10	2435
	Mars W.	76 47 4	2576	78 26 32	2561	80 6 20	2547	81 46 28	2534
	Regulus W.	73 15 21	2437	74 58 3	2423	76 41 5	2409	78 24 27	2396
	Antares E.	26 54 11	2432	25 11 22	2419	23 28 14	2407	21 44 49	2394
	α Aquilæ E.	80 33 23	3299	79 9 10	3295	77 44 53	3294	76 20 34	3293
19	Jupiter W.	103 30 58	2373	105 15 12	2362	106 59 41	2351	108 44 26	2341
	Mars W.	90 11 42	2470	91 53 37	2458	93 35 49	2448	95 18 16	2438
	Regulus W.	87 5 59	2333	88 51 11	2322	90 36 38	2311	92 22 22	2300
	Spica $\pi\gamma$ W.	33 3 6	2339	34 48 8	2326	36 33 29	2315	38 19 7	2302
	Antares E.	13 3 53	2354	11 19 12	2354	- - -	- - -	- - -	- - -
	α Aquilæ E.	69 19 43	3326	67 56 1	3310	66 32 36	3357	65 9 30	3378
20	Jupiter W.	117 31 39	2297	- - -	2290	121 3 57	2283	122 50 21	2276
	Mars W.	103 54 5	2391	- - -	2382	107 21 53	2375	109 6 3	2368
	Spica $\pi\gamma$ W.	47 11 20	2223	- - -	2244	50 45 51	2237	52 33 24	2230
	Saturn E.	26 46 20	2261	- - -	2249	30 20 31	2239	32 8 2	2229
	α Aquilæ E.	58	-	- - -	3383	55 42 42	3638	54 24 49	3698
	Fomalhaut E.	82	-	- - -	3426	78 41 4	2421	76 57 59	2417
21	Mars W.	-	-	- - -	-	121 19 5	2339	123 4 8	2341
	Spica $\pi\gamma$ W.	-	-	- - -	-	65 10 36	2193	66 59 14	2190
	Saturn W.	-	-	- - -	-	46 18	2182	46 35 13	2179
	Fomal W.	-	-	- - -	-	5	2417	63 11 55	2421

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	
21	α Pegasi E.	96 9 5	2568	94 29 26	2561	92 49 37	2554	91 9 39	
22	Spica η W.	68 47 57	2187	70 36 44	2184	72 25 35	2183	74 14 28	
	Saturn W.	48 24 13	2175	50 13 18	2172	52 2 28	2170	53 51 41	
	Antares W.	22 53 43	2189	24 42 27	2186	26 31 15	2184	28 20 7	
	Fomalhaut E.	61 28 51	2427	59 45 55	2435	58 3 10	2444	56 20 38	
	α Pegasi E.	82 48 27	2539	81 8 8	2540	79 27 50	2543	77 47 36	
23	Spica η W.	83 19 5	2182	85 7 59	2184	86 56 50	2186	88 45 39	
	Saturn W.	62 58 8	2167	64 47 25	2168	66 36 40	2170	68 25 53	
	Antares W.	37 24 51	2181	39 13 47	2182	41 2 42	2184	42 51 34	
	Fomalhaut E.	47 52 29	2536	46 12 6	2561	44 32 17	2588	42 53 6	
	α Pegasi E.	69 28 26	2586	67 49 12	2599	66 10 15	2612	64 31 36	
24	Saturn W.	77 30 57	2188	79 19 42	2192	81 8 21	2197	82 56 53	
	Antares W.	51 54 56	2202	53 43 21	2206	55 31 39	2211	57 19 50	
	Fomalhaut E.	34 49 50	2856	33 16 34	2927	31 44 49	3009	30 14 47	
	α Pegasi E.	56 24 32	2735	54 48 39	2764	53 13 24	2796	51 38 51	
	SUN E.	123 16 36	2504	121 35 28	2508	119 54 26	2512	118 13 30	
25	Saturn W.	91 57 37	2230	93 45 20	2237	95 32 53	2243	97 20 17	
	Antares W.	66 18 52	2243	68 6 15	2250	69 53 28	2256	71 40 32	
	α Pegasi E.	43 59 1	3070	42 30 15	3136	41 2 49	3209	39 36 50	
	α Arietis E.	82 21 29	2304	80 35 35	2311	78 49 51	2318	77 4 18	
	SUN E.	109 50 49	2548	108 10 43	2554	106 30 45	2562	104 50 58	
26	Saturn W.	106 14 37	2286	108 0 57	2294	109 47 5	2302	111 33 2	
	Antares W.	80 33 17	2299	82 19 18	2306	84 5 8	2314	85 50 47	
	α Arietis E.	68 19 29	2367	66 35 9	2377	64 51 2	2387	63 7 9	
	SUN E.	96 34 34	2607	94 55 49	2615	93 17 15	2624	91 38 53	
27	Antares W.	94 36 10	2362	96 20 40	2371	98 4 57	2379	99 49 2	
	α Arietis E.	54 31 36	2454	52 49 18	2467	51 7 18	2480	49 25 37	
	SUN E.	83 29 53	2676	81 52 41	2684	80 15 40	2693	78 38 51	
28	α Aquilæ W.	63 9 29	3531	64 29 19	3507	65 49 35	3487	67 10 14	
	Fomalhaut W.	30 6 46	3237	31 32 11	3170	32 58 56	3113	34 26 50	
	α Arietis E.	41 2 19	2574	39 22 49	2594	37 43 46	2615	36 5 12	
	SUN E.	70 37 49	2748	69 2 13	2757	67 26 49	2767	65 51 38	
29	α Aquilæ W.	73 57 34	3414	75 19 35	3407	76 41 43	3403	78 3 56	
	Fomalhaut W.	41 58 12	2920	43 30 6	2902	45 2 23	2887	46 34 58	
	α Arietis E.	28 1 22	2799	26 26 53	2847	24 53 26	2902	23 21 10	
	SUN E.	57 58 45	2824	56 24 48	2833	54 51 3	2842	53 17 30	
30	α Aquilæ W.	84 55 11	3408	86 17 18	3414	87 39 19	3420	89 1 13	
	Fomalhaut W.	54 20 48	2844	55 54 19	2842	57 27 52	2841	59 1 27	
	α Pegasi W.	37 18 41	3649	38 36 23	3579	39 55 20	3520	41 15 22	
	SUN E.	45 32 57	2902	44 0 40	2912	42 28 36	2923	40 56 46	
31	α Aquilæ W.	95 48 3	3484	97 8 45	3499	98 29 10	3516	99 49	
	Fomalhaut W.	66 49 5	2851	68 22 27	2854	69 55 45	2859	71 28	
	α Pegasi W.	48 7 49	3293	49 32 9	3270	50 56 55	3250	52 22	
	SUN E.	33 20 55	2988	31 50 27	3000	30 20 14	3011	28 56	

MEAN TIME.

LUNAR DISTANCES.

DAY of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
21	α Pegasi E.	89 29 33 2544		87 49 21 2541		86 9 5 2540		84 28 47 2538	
22	Spica μ W.	76 3 22 2181		77 52 18 2181		79 41 14 2181		81 30 10 2182	
	Saturn W.	55 40 57 2167		57 30 14 2167		59 19 31 2166		61 8 50 2166	
	Antares W.	30 9 2 2181		31 57 59 2180		33 46 56 2180		35 35 54 2181	
	Fomalhaut E.	54 38 20 2467		52 56 20 2480		51 14 39 2497		49 33 21 2515	
	α Pegasi E.	76 7 28 2552		74 27 27 2558		72 47 35 2566		71 7 54 2576	
23	Spica μ W.	90 34 24 2192		92 23 4 2194		94 11 40 2197		96 0 12 2200	
	Saturn W.	70 15 2 2175		72 4 8 2178		73 53 9 2181		75 42 6 2184	
	Antares W.	44 40 23 2188		46 29 8 2191		48 17 49 2194		50 6 25 2198	
	Fomalhaut E.	41 14 37 2655		39 36 56 2695		38 0 10 2741		36 24 25 2795	
	α Pegasi E.	62 53 19 2645		61 15 25 2665		59 37 58 2686		58 0 59 2710	
24	Saturn W.	84 45 18 2207		86 33 35 2212		88 21 44 2218		90 9 45 2224	
	Antares W.	59 7 55 2220		60 55 52 2226		62 43 40 2232		64 31 20 2237	
	Fomalhaut E.	28 46 45 3220		27 21 0 3356		- - - -		- - - -	
	α Pegasi E.	50 5 3 2870		48 32 5 2913		47 0 2 2960		45 28 59 3012	
	SUN E.	116 32 42 2523		114 52 1 2530		113 11 29 2535		111 31 5 2541	
25	Saturn W.	99 7 30 2257		100 54 33 2264		102 41 25 2272		104 28 6 2279	
	Antares W.	73 27 26 2270		75 14 10 2277		77 0 43 2285		78 47 5 2292	
	α Pegasi E.	38 12 27 3383		36 49 51 3487		- - - -		- - - -	
	α Arietis E.	75 18 57 2334		73 33 47 2342		71 48 48 2350		70 4 2 2359	
	SUN E.	103 11 20 2577		101 31 53 2584		99 52 36 2591		98 13 29 2600	
26	Saturn W.	113 18 47 2318		115 4 20 2326		116 49 41 2334		118 34 51 2342	
	Antares W.	87 36 15 2330		89 21 31 2338		91 6 35 2346		92 51 28 2353	
	α Arietis E.	61 23 31 2409		59 40 9 2419		57 57 2 2431		56 14 11 2442	
	SUN E.	90 0 42 2641		88 22 42 2649		86 44 54 2658		85 7 18 2666	
27	Antares W.	101 32 56 2394		103 16 39 2403		105 0 10 2412		106 43 28 2421	
	α Arietis E.	47 44 15 2508		46 3 13 2523		44 22 32 2540		42 42 14 2556	
	SUN E.	77 2 14 2711		75 25 49 2721		73 49 37 2730		72 13 37 2739	
28	α Aquilæ W.	68 31 12 3454		69 52 28 3441		71 13 58 3430		72 35 41 3421	
	Fomalhaut W.	35 55 41 3026		37 25 21 2992		38 55 44 2963		40 26 43 2939	
	α Arietis E.	34 27 10 2664		32 49 42 2692		31 12 52 2724		29 36 44 2759	
	SUN E.	64 16 38 2786		62 41 52 2795		61 7 17 2805		59 32 55 2814	
29	α Aquilæ W.	79 26 12 3400		80 48 29 3400		82 10 45 3401		83 33 0 3405	
	Fomalhaut W.	48 7 48 2866		49 40 50 2833		51 14 2 2852		52 47 22 2848	
	α Arietis E.	21 50 17 3047		20 21 2 3113		- - - -		- - - -	
	SUN E.	51 44 10 2862		50 11 3 2872		48 38 8 2882		47 5 26 2892	
30	α Aquilæ W.	90 22 34 3437		- - - -		93 5 56 3459		94 27 6 3471	
	Fomalhaut W.	60 33 2 2991		- - - -		63 42 9 2845		65 15 39 2848	
	α Pegasi W.	42 22 3 3391		- - - -		45 20 46 3350		46 44 0 3319	
	SUN E.	39 22 3 2882		- - - -		36 22 34 2965		34 51 38 2976	
31	α Aquilæ W.	- - - -		- - - -		103 47 38 3593		105 6 20 3616	
	Fomalhaut W.	- - - -		- - - -		76 7 50 2881		77 40 33 2887	
	α Pegasi V	- - - -		- - - -		56 39 23 3195		58 5 38 3186	
	SUN	- - - -		- - - -		- - - -		- - - -	

CONFIGURATIONS OF THE SATELLITES OF JUPITER

At 10^h, MEAN TIME.

Day of the Month.	<i>West.</i>				<i>East.</i>			
1	·4		·3 2·	○	1·			
2		·4	·2	·1	○	·3		
3			·4		○	1·	·2	·3
4	·1 ●			·4	○	2·	3·	
5			2·	1·	○		·4	
6			3·		·2	○	·1	·4
7		·3		1·	○	2·		·4
8			·3	2·	○	1·		·4
9			·2	·1	○	·3		4·
10					○	1·	·2	·3 4·
11					·1	○	2·	3· 4·
12			2·		○	3·	4·	
13			3·	4·	·2	○	·1	
14		·3 4·		1·	○		·2	
15		4·	·3		○	·1		
16		4·	·2	·1	○			
17	·4				○	1·	·2	·3
18	·4			·1	○	2·	3·	
19		·4	2·		○	3·		
20			3·	·2	○			
21		3·		1·	○		·2	
22			·3		○	2·	·1	·4
23	● ·3		·2	·1	○			·4
24	● ·2				○	1·	·3	·4
25				·1	○	2·	3·	4·
26			2·		○	1·	3·	4·
27	● ·1		3·		○			4·
28		3·		1·	○	·2	4·	
29		·3			○	4·	·1	
30			2·	4·	·1	·3	○	
31	·2 ●	4·			○	1·	·3	

This Table represents, at 10^h after *Mean Noon* of each day of the month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page. Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite at its greatest elongation, the point is placed above or below the centre of the numeral. A circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shade of Jupiter.

ECLIPSES OF THE SATELLITES OF JUPITER.

SATELLITE.	Day of the Month.	Mean Time. h m s	Sidereal Time. h m s	PHASE as seen in an inverting Telescope.
I.	2	17 34 46.4	20 18 25.4	Em.
	4*	12 3 30.6	14 54 8.3	Em.
	6	6 32 17.3	9 29 53.6	Em.
	8	1 1 1.5	4 5 36.6	Em.
	9	19 29 48.5	22 41 22.3	Em.
	11	13 58 32.5	17 17 5.0	Em.
	13	8 27 20.4	11 52 51.6	Em.
	15	2 56 3.6	6 28 33.5	Em.
	16	21 24 51.3	1 4 19.9	Em.
	18	15 53 35.8	19 40 3.1	Em.
	20*	10 22 23.3	14 15 49.3	Em.
	22	4 51 7.3	8 51 32.0	Em.
	23	23 19 55.4	3 27 18.8	Em.
	25	17 48 38.9	22 3 1.0	Em.
	27	12 17 26.7	16 38 47.5	Em.
	29	6 46 10.4	11 14 29.9	Em.
	31	1 14 57.8	5 50 16.0	Em.
II.	3	3 33 31.6	6 18 48.9	Em.
	6	16 51 58.9	19 51 17.1	Em.
	10	6 9 54.8	9 23 13.8	Em.
	13	19 28 13.6	22 55 33.4	Em.
	17*	8 46 5.5	12 27 26.0	Em.
	20	22 4 17.4	1 59 38.7	Em.
	24*	11 22 7.0	15 31 29.1	Em.
	28	0 40 10.4	5 3 33.2	Em.
	31	13 57 55.2	18 35 18.7	Em.
III.	2	0 8 31.6	2 49 18.8	Im.
	2	3 41 34.6	6 22 56.8	Em.
	9	4 8 3.3	7 17 5.7	Im.
	9	7 41 0.5	10 50 37.8	Em.
	16	8 8 8.4	11 45 26.1	Im.
	16*	11 40 59.1	15 18 51.7	Em.
	23	12 7 32.5	16 13 5.4	Im.
	23	15 40 16.4	19 46 24.3	Em.
	30	16 6 50.4	20 40 38.6	Im.
	30	19 39 26.3	0 13 49.4	Em.
IV.	5	0 19 15.3	3 1 33.9	Im.
	5	5 4 36.1	7 2 1.3	Em.
	21	18 21 12.5	22 2 47.7	Im.
	21	23 6 20.1	2 2 3.1	Em.

APPROXIMATE SIDEREAL TIMES
OF THE
OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER
AND OF THE
TRANSITS OF THE SATELLITES AND THEIR SHADOWS
OVER THE DISC OF THE PLANET.

Satellite.	OCCULTATIONS.		TRANSITS OF SATELLITES.		TRANSITS OF SATELLITES.	
	Immersion.	Emersion.	Ingress.	Egress.	Ingress.	Egress.
	d h m	d h m	d h m	d h m	d h m	d h m
I.	2 16 43		1 19 32	1 21 52	1 20 49	1 22 29
	4* 11 19		3* 14 7	3 16 28	3* 15 24	3 17 54
	6 5 55		5 8 43	5 11 4	5 10 0	5 12 30
	7 0 31		7 3 19	7 5 40	7 4 36	7 6 57
	9 19 7		8 21 55	8 0 16	8 23 12	8 25 33
	11* 13 43		10 16 31	10 18 52	10 17 47	10 19 58
	13 8 19	In	12 11 7	12* 13 28	12* 12 23	12 14 34
	14 2 55	the	14 5 44	14 8 4	14 6 59	14 8 50
	16 21 32		15 0 20	15 2 40	15 1 35	15 3 56
	18 16 8	Shadow.	17 18 56	17 21 17	17 20 10	17 22 31
	20 10 44		19* 13 32	19 15 53	19* 14 46	19 16 57
	22 5 20		21 8 9	21 10 30	21 9 22	21 11 43
	23 23 57		22 2 45	23 5 6	22 3 58	23 5 9
	25 18 33		24 21 22	24 23 42	24 22 33	24 24 54
	27 13 10		26 15 58	26 18 19	26 17 9	26 19 30
	29 7 46		28 10 34	28 12 55	28 11 45	28 13 56
	30 2 23		30 5 11	30 7 32	30 6 20	30 8 41
			31 23 48	31 2 8	31 0 56	31 2 17
II.	2 0 49		1 5 32	1 8 29	1 8 7	1 10 28
	6* 14 22		4 19 4	4 22 1	4 21 40	4 23 41
	10 3 56	In	8 8 37	8 11 34	8 11 11	8 13 32
	13 17 30		11 22 11	11 1 8	11 0 44	11 2 55
	17 7 4	the	15 11 45	15* 14 42	15* 14 16	15 16 37
	20 20 38		18 1 20	19 4 17	19 3 48	19 5 59
	24 10 13	Shadow.	22* 14 54	22 17 51	22 17 20	22 19 41
	27 23 48		26 4 30	26 7 27	26 6 52	26 8 53
	31 13 24		29 18 5	29 21 2	29 20 24	29 22 25
III.	1 21 32	1 1 16	5* 11 43	5* 15 26	5 16 54	5 18 55
	8 2 3	9 5 46	12 16 15	12 19 59	12 21 21	12 23 22
	16 6 38	16 10 21	19 20 51	19 0 34	19 1 49	19 3 50
	23 11 15	23* 14 59	26 1 30	27 5 14	27 6 17	27 8 18
	30 15 56	30 19 39				
IV.	4* 14 57	4 19 51	12 23 3	13 3 57	13 10 54	13 12 55
	21 10 42	21* 15 36	29 19 7	29 0 1	30 6 2	30 8 3

For correcting the Places of the Fixed Stars.					Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^d .778395. Days.	From Mean Noon of January 1.	
At Mean Midnight,							Day of the Year.	Fraction of the Year.
Logarithm of								
A	B	C	D					
1	-1.1468	-1.1288	+9.1165	-0.8998	21 19 40 ^{h m s} .60	39	120	.329
2	1.1402	1.1370	9.1261	0.8990	21 15 44.70	40	121	.331
3	1.1334	1.1449	9.1355	0.8982	21 11 48.79	41	122	.334
4	-1.1264	-1.1525	+9.1448	-0.8974	21 7 52.88	42	123	.337
5	1.1191	1.1599	9.1541	0.8967	21 3 56.97	43	124	.339
6	1.1116	1.1671	9.1632	0.8959	21 0 1.06	44	125	.342
7	-1.1038	-1.1740	+9.1722	-0.8951	20 56 5.15	45	126	.345
8	1.0958	1.1807	9.1811	0.8943	20 52 9.23	46	127	.348
9	1.0875	1.1871	9.1899	0.8935	20 48 13.32	47	128	.350
10	-1.0789	-1.1934	+9.1987	-0.8928	20 44 17.40	48	129	.353
11	1.0700	1.1994	9.2073	0.8920	20 40 21.49	49	130	.356
12	1.0608	1.2052	9.2159	0.8912	20 36 25.58	50	131	.359
13	-1.0513	-1.2108	+9.2243	-0.8905	20 32 29.67	51	132	.361
14	1.0415	1.2162	9.2326	0.8897	20 28 33.76	52	133	.364
15	1.0313	1.2215	9.2409	0.8890	20 24 37.85	53	134	.367
16	-1.0207	-1.2265	+9.2490	-0.8883	20 20 41.95	54	135	.370
17	1.0098	1.2314	9.2571	0.8876	20 16 46.04	55	136	.372
18	0.9984	1.2361	9.2651	0.8869	20 12 50.13	56	137	.375
19	-0.9866	-1.2406	+9.2730	-0.8862	20 8 54.22	57	138	.378
20	0.9744	1.2449	9.2808	0.8855	20 4 58.31	58	139	.381
21	0.9618	1.2491	9.2886	0.8848	20 1 2.39	59	140	.383
22	-0.9486	-1.2531	+9.2962	-0.8842	19 57 6.48	60	141	.386
23	0.9348	1.2570	9.3038	0.8836	19 53 10.56	61	142	.389
24	0.9205	1.2607	9.3113	0.8830	19 49 14.64	62	143	.392
25	-0.9056	-1.2642	+9.3187	-0.8824	19 45 18.73	63	144	.394
26	0.8900	1.2676	9.3260	0.8818	19 41 22.82	64	145	.397
27	0.8738	1.2708	9.3332	0.8813	19 37 26.91	65	146	.400
28	-0.8568	-1.2739	+9.3404	0	19 33 31.00	66	147	.402
29	0.8389	1.2769	9.3475		19 29 35.10	67	148	.405
30	0.8202	1.2797	9.3545		19 25 39.19	68	149	.408
31	0.8005	1.2824	9.3616		19 21 43.28	69	150	.411
32	-0.7798	-1.28			19 17 47.37	70	151	.413

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subd. from added to Apparent Time.		D. f. 1 h.
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.				
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s	
Thur.	1	4 36 27.42	10.240	N.22 4 24.6	19.92	1 8.32	2 34.60	0.3	
Frid.	2	4 40 33.19	10.257	22 12 22.6	18.95	1 8.37	2 25.42	0.3	
Sat.	3	4 44 39.35	10.272	22 19 57.4	17.98	1 8.42	2 15.84	0.4	
Sun.	4	4 48 45.88	10.288	22 27 8.9	16.99	1 8.47	2 5.89	0.4	
Mon.	5	4 52 52.78	10.300	22 33 56.7	16.01	1 8.52	1 55.59	0.4	
Tues.	6	4 56 59.98	10.313	22 40 20.9	15.01	1 8.57	1 44.98	0.4	
Wed.	7	5 1 7.50	10.324	22 46 21.2	14.01	1 8.61	1 34.05	0.4	
Thur.	8	5 5 15.28	10.335	22 51 57.5	13.00	1 8.65	1 22.86	0.4	
Frid.	9	5 9 23.33	10.345	22 57 9.6	12.00	1 8.69	1 11.40	0.4	
Sat.	10	5 13 31.62	10.353	23 1 57.5	10.98	1 8.72	0 59.70	0.4	
Sun.	11	5 17 40.10	10.362	23 6 21.1	9.96	1 8.75	0 47.81	0.3	
Mon.	12	5 21 48.79	10.368	23 10 20.2	8.94	1 8.78	0 35.71	0.3	
Tues.	13	5 25 57.63	10.375	23 13 54.8	7.92	1 8.81	0 23.44	0.3	
Wed.	14	5 30 6.63	10.380	23 17 4.9	6.90	1 8.83	0 11.04	0.3	
Thur.	15	5 34 15.76	10.385	23 19 50.4	5.87	1 8.85	0 1.51	0.3	
Frid.	16	5 38 25.00	10.389	23 22 11.2	4.84	1 8.87	0 14.15	0.3	
Sat.	17	5 42 34.34	10.392	23 24 7.3	3.81	1 8.88	0 26.89	0.3	
Sun.	18	5 46 43.75	10.394	23 25 38.7	2.78	1 8.88	0 39.70	0.3	
Mon.	19	5 50 53.20	10.395	23 26 45.3	1.75	1 8.89	0 52.55	0.3	
Tues.	20	5 55 2.69	10.396	23 27 27.3	0.72	1 8.89	1 5.44	0.3	
Wed.	21	5 59 12.20	10.395	23 27 44.5	0.32	1 8.89	1 18.35	0.3	
Thur.	22	6 3 21.68	10.395	23 27 36.9	1.35	1 8.88	1 31.24	0.3	
Frid.	23	6 7 31.15	10.393	23 27 4.6	2.38	1 8.88	1 44.12	0.3	
Sat.	24	6 11 40.57	10.388	23 26 7.5	3.41	1 8.87	1 56.95	0.3	
Sun.	25	6 15 49.89	10.385	23 24 45.6	4.44	1 8.85	2 9.69	0.3	
Mon.	26	6 19 59.14	10.380	23 22 59.0	5.47	1 8.83	2 22.34	0.3	
Tues.	27	6 24 8.27	10.375	23 20 47.8	6.50	1 8.81	2 34.88	0.3	
Wed.	28	6 28 17.26	10.368	23 18 11.9	7.52	1 8.78	2 47.28	0.3	
Thur.	29	6 32 26.09	10.360	23 15 11.4	8.54	1 8.76	2 59.52	0.3	
Frid.	30	6 36 34.73	10.351	23 11 46.5	9.56	1 8.73	3 11.57	0.3	
Sat.	31	6 40 43.16		N.23 7 57.1		1 8.70	3 23.40		

* Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Side

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to subt. from Mean Time.	Sidereal Time.
		Right Ascension.	Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Thur.	1	4 36 27.86	N. 22 4 25.5	15 47.1	2 34.58	4 39 2.44
Frid.	2	4 40 33.60	22 12 23.4	15 47.0	2 25.40	4 42 59.00
Sat.	3	4 44 39.74	22 19 58.1	15 46.8	2 15.82	4 46 55.56
Sun.	4	4 48 46.24	22 27 9.5	15 46.7	2 5.88	4 50 52.12
Mon.	5	4 52 53.11	22 33 57.3	15 46.6	1 55.58	4 54 48.69
Tues.	6	4 57 0.28	22 40 21.3	15 46.5	1 44.97	4 58 45.25
Wed.	7	5 1 7.77	22 46 21.6	15 46.4	1 34.04	5 2 41.81
Thur.	8	5 5 15.52	22 51 57.8	15 46.3	1 22.85	5 6 38.37
Frid.	9	5 9 23.54	22 57 9.9	15 46.2	1 11.39	5 10 34.93
Sat.	10	5 13 31.79	23 1 57.7	15 46.1	0 59.69	5 14 31.48
Sun.	11	5 17 40.24	23 6 21.2	15 46.0	0 47.80	5 18 28.04
Mon.	12	5 21 48.89	23 10 20.3	15 45.9	0 35.70	5 22 24.59
Tues.	13	5 25 57.70	23 13 54.9	15 45.8	0 23.44	5 26 21.14
Wed.	14	5 30 6.66	23 17 4.9	15 45.8	0 11.04	5 30 17.70
Thur.	15	5 34 15.76	23 19 50.4	15 45.7	0 1.51	5 34 14.25
Frid.	16	5 38 24.96	23 22 11.1	15 45.6	0 14.15	5 38 10.81
Sat.	17	5 42 34.26	23 24 7.2	15 45.6	0 26.88	5 42 7.38
Sun.	18	5 46 43.63	23 25 38.6	15 45.5	0 39.69	5 46 3.94
Mon.	19	5 50 53.05	23 26 45.3	15 45.4	0 52.54	5 50 0.51
Tues.	20	5 55 2.50	23 27 27.3	15 45.4	1 5.43	5 53 57.07
Wed.	21	5 59 11.97	23 27 44.5	15 45.3	1 18.34	5 57 53.63
Thur.	22	6 3 21.42	23 27 37.0	15 45.3	1 31.23	6 1 50.19
Frid.	23	6 7 30.85	23 27 4.6	15 45.2	1 44.10	6 5 46.75
Sat.	24	6 11 40.23	23 26 7.6	15 45.2	1 56.93	6 9 43.30
Sun.	25	6 15 49.52	23 24 45.8	15 45.2	2 9.67	6 13 39.85
Mon.	26	6 19 58.73	23 22 59.2	15 45.1	2 22.32	6 17 36.41
Tues.	27	6 24 7.82	23 1	15.1	2 34.86	6 21 32.96
Wed.	28	6 28 16.78	23		2 47.26	6 25 29.52
Thur.	29	6 32 25.57	23		2 59.49	6 29 26.08
Frid.	30	6 36 34.18	23		3 11.54	6 33 22.64
Sat.	31	6 40 42.57	N. 23		3 23.37	6 37 19.20

* The Semidiameter for

for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	70° 42' 36" 7	N. 0° 44'	0.0062904	15° 21' 3"	15° 17' 3"	56° 20' 9"	56° 6'
2	71 40 4 3	0° 56'	0.0063510	15 13 3	15 9 4	55 51 5	55 37
3	72 37 31 1	0° 67'	0.0064092	15 5 6	15 2 0	55 23 3	55 10
4	73 34 56 9	0° 77'	0.0064650	14 58 6	14 55 4	54 57 6	54 46
5	74 32 22 0	0° 84'	0.0065183	14 52 7	14 50 2	54 35 8	54 26
6	75 29 45 9	0° 87'	0.0065692	14 48 1	14 46 5	54 19 2	54 13
7	76 27 9 0	0° 89'	0.0066176	14 45 3	14 44 7	54 8 9	54 6
8	77 24 30 9	0° 87'	0.0066637	14 44 8	14 45 4	54 6 8	54 9
9	78 21 51 9	0° 82'	0.0067076	14 46 7	14 48 6	54 13 8	54 20
10	79 19 11 8	0° 75'	0.0067494	14 51 2	14 54 4	54 30 3	54 42
11	80 16 30 7	0° 65'	0.0067892	14 58 4	15 3 0	54 56 8	55 13
12	81 13 48 7	0° 53'	0.0068271	15 8 3	15 14 1	55 33 1	55 54
13	82 11 5 7	0° 40'	0.0068634	15 20 4	15 27 1	56 17 5	56 42
14	83 8 21 9	0° 27'	0.0068979	15 34 2	15 41 4	57 8 1	57 34
15	84 5 37 4	0° 14'	0.0069309	15 48 7	15 55 9	58 1 4	58 27
16	85 2 52 1	N. 0° 03'	0.0069623	16 2 9	16 9 4	58 53 5	59 17
17	86 0 6 4	S. 0° 08'	0.0069923	16 15 3	16 20 5	59 39 1	59 58
18	86 57 20 2	0° 16'	0.0070209	16 24 9	16 28 3	60 14 2	60 26
19	87 54 33 4	0° 22'	0.0070482	16 30 6	16 31 9	60 35 4	60 40
20	88 51 46 4	0° 24'	0.0070740	16 32 0	16 31 1	60 40 5	60 37
21	89 48 59 1	0° 24'	0.0070984	16 29 2	16 26 3	60 30 1	60 19
22	90 46 11 6	0° 21'	0.0071213	16 22 6	16 18 3	60 5 9	59 50
23	91 43 24 0	0° 14'	0.0071425	16 13 4	16 8 1	59 32 3	59 12
24	92 40 36 3	S. 0° 05'	0.0071620	16 2 6	15 57 0	58 52 4	58 31
25	93 37 48 5	N. 0° 06'	0.0071796	15 51 2	15 45 5	58 10 6	57 49
26	94 35 0 9	0° 18'	0.0071951	15 40 0	15 34 6	57 29 4	57 9
27	95 32 13 4	0° 32'	0.0072085	15 9 4	15 24 3	56 50 5	56 32
28	96 29 26 1	0° 45'	0.0072196	15 19 6	15 15 2	56 14 8	55 58
29	97 26 38 9	0° 58'	0.0072284	15 11 0	15 7 0	55 43 1	55 28
30	98 23 52 0	0° 69'	0.0072347	15 3 3	14 59 9	55 15 0	55 2
31	99 21 5 1	N. 0° 79'	0.0072385	14 56 8	14 53 9	54 50 9	5

MEAN TIME.

		THE MOON'S					
Day of the Week.	Day of the Month.	Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
Thur.	1	49° 21' 29" 0	55° 45' 34" 8	N. 1° 37' 6" 5	N. 2° 9' 21" 9	27° 7'	23° 13' 2"
Frid.	2	62° 6' 45" 7	68° 25' 5' 4	2° 39' 42" 7	3° 7' 50" 4	28° 7'	♂
Sat.	3	74° 40' 36" 7	80° 53' 22" 9	3° 33' 26" 9	3° 56' 17" 7	0° 2'	0° 4' 9"
Sun.	4	87° 3' 29" 1	93° 11' 1' 9	4° 16' 10" 6	4° 32' 56" 5	1° 2'	0° 57' 9"
Mon.	5	99° 16' 9" 0	105° 19' 1' 8	4° 46' 28" 5	4° 56' 41" 5	2° 2'	1° 51' 0"
Tues.	6	111° 19' 53" 2	117° 18' 59" 3	5° 3' 32" 9	5° 7' 2' 4	3° 2'	2° 42' 5"
Wed.	7	123° 16' 38" 8	129° 13' 13" 4	5° 7' 10" 3	5° 3' 59" 2	4° 2'	3° 31' 7"
Thur.	8	135° 9' 7" 6	141° 4' 49" 1	4° 57' 31" 7	4° 47' 52" 9	5° 2'	4° 17' 9"
Frid.	9	147° 0' 47" 1	152° 57' 34" 2	4° 35' 8" 3	4° 19' 23" 3	6° 2'	5° 1' 6"
Sat.	10	158° 55' 43" 7	164° 55' 51" 4	4° 0' 45" 5	3° 39' 22" 2	7° 2'	5° 43' 3"
Sun.	11	170° 58' 33" 3	177° 4' 28" 1	3° 15' 22" 9	2° 48' 58" 0	8° 2'	6° 24' 1"
Mon.	12	183° 14' 12" 4	189° 28' 22" 5	2° 20' 19" 0	1° 49' 40" 0	9° 2'	7° 5' 0"
Tues.	13	195° 47' 33" 0	202° 12' 16" 8	1° 17' 16" 8	N. 0° 43' 28" 1	10° 2'	7° 47' 4"
Wed.	14	208° 43' 2" 2	215° 20' 11" 7	N. 0° 8' 35" 2	S. 0° 26' 56" 6	11° 2'	8° 32' 7"
Thur.	15	222° 4' 1" 9	228° 54' 42" 2	S. 1° 2' 40" 2	1° 38' 3" 1	12° 2'	9° 22' 2"
Frid.	16	235° 52' 11" 6	242° 56' 18" 3	2° 12' 31" 3	2° 45' 28" 2	13° 2'	10° 17' 1"
Sat.	17	250° 6' 40" 3	257° 22' 42" 7	3° 16' 15" 3	3° 44' 14" 3	14° 2'	11° 17' 7"
Sun.	18	264° 43' 42" 0	272° 8' 41" 0	4° 8' 48" 2	4° 29' 23" 4	15° 2'	12° 22' 6"
Mon.	19	279° 36' 38" 1	287° 6' 23" 2	4° 45' 30" 3	4° 56' 46" 9	16° 2'	13° 28" 9"
Tues.	20	294° 36' 44" 4	302° 6' 30" 9	5° 2' 57" 6	5° 3' 55" 7	17° 2'	14° 32" 9"
Wed.	21	309° 34' 35" 3	316° 59' 56" 1	4° 59' 42" 7	4° 50' 27" 3	18° 2'	15° 32" 3"
Thur.	22	324° 21' 40" 6	331° 39' 6" 3	4° 36' 27" 1	4° 18' 3" 4	19° 2'	16° 26" 6"
Frid.	23	338° 51' 41" 7	345° 59' 4" 7	3° 55' 43" 9	3° 29' 58" 7	20° 2'	17° 16" 5"
Sat.	24	353° 1' 4" 2	359° 57' 37" 3	3° 1' 20" 2	2° 30' 20" 9	21° 2'	18° 3' 5"
Sun.	25	6° 48' 48" 9	13° 34' 48" 3	1° 57' 34" 2	1° 23' 32" 2	22° 2'	18° 49" 0"
Mon.	26	20° 15' 50" 9	26° 52' 15" 1	S. 0° 48' 46" 2	S. 0° 13' 45" 0	23° 2'	19° 34" 4"
Tues.	27	33° 24' 19" 7	39° 52' 25" 5	0° 5' 3" 3	N. 0° 55' 11" 1	24° 2'	20° 21" 0"
Wed.	28	46° 16' 52" 7	52° 38' 0" 0	0° 1' 59" 55" 4	25° 2'	21° 9" 4"	
Thur.	29	58° 56' 5" 7	65° 11' 24" 4	0° 2' 57" 37" 3	26° 2'	21° 59" 8"	
Frid.	30	71° 24' 11" 6	77° 34' 22" 2	0° 3' 45" 57" 7	27° 2'	22° 52" 0"	
Sat.	31	83° 42' 55" 7	89° 49' 11" 1	1° 4' 23" 8" 5	28° 2'	23° 44" 8"	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 1.				SATURDAY 3.			
0	3 5 44.47	N.19 8 29.4	114.18	0	4 51 40.31	N.26 6 54.2	51
1	3 7 52.14	19 19 54.5	113.17	1	4 53 56.99	26 12 29.3	51
2	3 10 0.01	19 31 13.5	112.15	2	4 56 13.79	26 17 56.1	51
3	3 12 8.09	19 42 26.4	111.12	3	4 58 30.70	26 23 14.5	51
4	3 14 16.39	19 53 33.1	110.10	4	5 0 47.73	26 28 24.6	51
5	3 16 24.90	20 4 33.7	109.03	5	5 3 4.87	26 33 26.2	48
6	3 18 33.62	20 15 27.9	107.98	6	5 5 22.11	26 38 19.4	47
7	3 20 42.55	20 26 15.8	106.92	7	5 7 39.46	26 43 4.2	46
8	3 22 51.69	20 36 57.3	105.83	8	5 9 56.89	26 47 40.5	44
9	3 25 1.04	20 47 32.3	104.75	9	5 12 14.42	26 52 8.3	43
10	3 27 10.61	20 58 0.8	103.65	10	5 14 32.04	26 56 27.5	41
11	3 29 20.39	21 8 22.7	102.55	11	5 16 49.73	27 0 38.2	40
12	3 31 30.38	21 18 38.0	101.42	12	5 19 7.49	27 4 40.4	38
13	3 33 40.58	21 28 46.5	100.30	13	5 21 25.33	27 8 34.0	37
14	3 35 50.99	21 38 48.3	99.17	14	5 23 43.23	27 12 19.0	36
15	3 38 1.61	21 48 43.3	98.03	15	5 26 1.20	27 15 55.4	34
16	3 40 12.44	21 58 31.5	96.87	16	5 28 19.22	27 19 23.1	33
17	3 42 23.49	22 8 12.7	95.70	17	5 30 37.28	27 22 42.2	31
18	3 44 34.74	22 17 46.9	94.55	18	5 32 55.40	27 25 52.7	30
19	3 46 46.19	22 27 14.2	93.35	19	5 35 13.55	27 28 54.6	28
20	3 48 57.85	22 36 34.3	92.17	20	5 37 31.73	27 31 47.8	27
21	3 51 9.72	22 45 47.3	90.98	21	5 39 49.94	27 34 32.3	25
22	3 53 21.79	22 54 53.2	89.77	22	5 42 8.17	27 37 8.1	24
23	3 55 34.07	N.23 3 51.8	88.57	23	5 44 26.42	N.27 39 35.3	23
FRIDAY 2.				SUNDAY 4.			
0	3 57 46.54	N.23 12 43.2	87.35	0	5 46 44.68	N.27 41 53.8	21
1	3 59 59.22	23 21 27.3	86.12	1	5 49 2.95	27 44 3.6	20
2	4 2 12.09	23 30 4.0	84.88	2	5 51 21.21	27 46 4.7	18
3	4 4 25.16	23 38 33.3	83.63	3	5 53 39.48	27 47 57.2	17
4	4 6 38.42	23 46 55.1	82.38	4	5 55 57.72	27 49 40.9	15
5	4 8 51.88	23 55 9.4	81.12	5	5 58 15.95	27 51 16.0	14
6	4 11 5.52	24 3 16.1	79.85	6	6 0 34.16	27 52 42.3	12
7	4 13 19.35	24 11 15.2	78.57	7	6 2 52.34	27 54 0.0	11
8	4 15 33.37	24 19 6.6	77.30	8	6 5 10.48	27 55 9.1	10
9	4 17 47.57	24 26 50.4	76.00	9	6 7 28.59	27 56 9.4	8
10	4 20 1.94	24 34 26.4	74.70	10	6 9 46.64	27 57 1.1	7
11	4 22 16.50	24 41 54.6	73.40	11	6 12 4.65	27 57 44.2	5
12	4 24 31.22	24 49 15.0	72.08	12	6 14 22.60	27 58 18.6	4
13	4 26 46.12	24 56 27.5	70.77	13	6 16 40.49	27 58 44.4	2
14	4 29 1.18	25 3 32.1	69.43	14	6 18 58.30	27 59 1.5	1
15	4 31 16.42	25 10 28.7	68.10	15	6 21 16.05	27 59 10.1	0
16	4 33 31.81	25 17 17.3	66.77	16	6 23 33.71	27 59 10.1	1
17	4 35 47.36	25 23 57.9	65.42	17	6 25 51.29	27 59 1.5	2
18	4 38 3.06	25 30 30.4	64.07	18	6 28 8.77	27 58 44.3	4
19	4 40 18.91	25 36 54.8	62.72	19	6 30 26.16	27 58 18.6	5
20	4 42 34.91	25 43 11.1	61.35	20	6 32 43.45	27 57 44.4	7
21	4 44 51.06	25 49 19.2	59.98	21	6 35 0.63	27 57 1.6	8
22	4 47 7.34	25 55 19.1	58.62	22	6 37 17.70	27 56 10.4	9
23	4 49 23.76	26 1 10.8	57.23	23	6 39 34.65	27 55 10.7	11
24	4 51 40.31	N.26 6 54.2		24	6 41 51.48	N.27 54 2.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 5.				WEDNESDAY 7.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	6 41 51.48	N. 27 54 2.6	12.75	0	8 27 32.03	N. 24 25 4.8	72.88
1	6 44 8.18	27 52 46.1	14.17	1	8 29 38.15	24 17 47.5	73.93
2	6 46 24.75	27 51 21.1	15.55	2	8 31 43.99	24 10 23.9	75.00
3	6 48 41.18	27 49 47.8	16.93	3	8 33 49.56	24 2 53.9	76.07
4	6 50 57.47	27 48 6.2	18.32	4	8 35 54.85	23 55 17.5	77.08
5	6 53 13.61	27 46 16.3	19.70	5	8 37 59.87	23 47 35.0	78.13
6	6 55 29.60	27 44 18.1	21.08	6	8 40 4.61	23 39 46.2	79.15
7	6 57 45.44	27 42 11.6	22.45	7	8 42 9.09	23 31 51.3	80.17
8	7 0 1.11	27 39 56.9	23.82	8	8 44 13.28	23 23 50.3	81.18
9	7 2 16.61	27 37 34.0	25.17	9	8 46 17.21	23 15 43.2	82.17
10	7 4 31.94	27 35 3.0	26.53	10	8 48 20.86	23 7 30.2	83.17
11	7 6 47.10	27 32 23.8	27.88	11	8 50 24.23	22 59 11.2	84.15
12	7 9 2.07	27 29 36.5	29.22	12	8 52 27.34	22 50 46.3	85.13
13	7 11 16.86	27 26 41.2	30.57	13	8 54 30.17	22 42 15.5	86.08
14	7 13 31.46	27 23 37.8	31.88	14	8 56 32.73	22 33 39.0	87.05
15	7 15 45.87	27 20 26.5	33.22	15	8 58 35.02	22 24 56.7	88.00
16	7 18 0.08	27 17 7.2	34.53	16	9 0 37.03	22 16 8.7	88.93
17	7 20 14.09	27 13 40.0	35.85	17	9 2 38.78	22 7 15.1	89.88
18	7 22 27.90	27 10 4.9	37.15	18	9 4 40.26	21 58 15.8	90.78
19	7 24 41.50	27 6 22.0	38.45	19	9 6 41.47	21 49 11.1	91.72
20	7 26 54.89	27 2 31.3	39.73	20	9 8 42.42	21 40 0.8	92.62
21	7 29 8.06	26 58 32.9	41.03	21	9 10 43.10	21 30 45.1	93.52
22	7 31 21.01	26 54 26.7	42.30	22	9 12 43.52	21 21 24.0	94.42
23	7 33 33.74	N. 26 50 12.9	43.58	23	9 14 43.68	N. 21 11 57.5	95.28
TUESDAY 6.				THURSDAY 8.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	7 35 46.24	N. 26 45 51.4	44.83	0	9 16 43.58	N. 21 2 25.8	96.17
1	7 37 58.52	26 41 22.4	46.10	1	9 18 43.22	20 52 48.8	97.02
2	7 40 10.56	26 36 45.8	47.35	2	9 20 42.60	20 43 6.7	97.88
3	7 42 22.37	26 32 1.7	48.58	3	9 22 41.73	20 33 19.4	98.73
4	7 44 33.94	26 27 10.2	49.83	4	9 24 40.61	20 23 27.0	99.58
5	7 46 45.27	26 22 11.2	51.05	5	9 26 39.23	20 13 29.5	100.40
6	7 48 56.36	26 17 4.9	52.27	6	9 28 37.60	20 3 27.1	101.23
7	7 51 7.20	26 11 51.3	53.48	7	9 30 35.72	19 53 19.7	102.05
8	7 53 17.80	26 6 30.4	54.70	8	9 32 33.60	19 43 7.4	102.87
9	7 55 28.14	26 1 2.2	55.88	9	9 34 31.24	19 32 50.2	103.65
10	7 57 38.23	25 55 26.9	57.07	10	9 36 28.63	19 22 3.3	104.45
11	7 59 48.07	25 49 44.5	58.27	11	9 38 25.78	19 11 6.6	105.23
12	8 1 57.65	25 43 54.9	59.43	12	9 40 22.70	19 0 1.0	106.02
13	8 4 6.97	25 37 58.3	60.60	13	9 42 19.38	18 48 15.8	
14	8 6 16.03	25 31 54.7	61.77	14	9 44 15.8	18 36 12.0	
15	8 8 24.83	25 25 44.1	62.90	15	9 46 12.0	18 24 8.0	
16	8 10 33.37	25 19 26.7	64.05	16	9 48 8.0	18 12 1.0	
17	8 12 41.64	25 13 2.4	65.18	17	9 50 3.0	18 0 0.0	
18	8 14 49.64	25 6 31.3	66.30	18	9 51 5.0	17 48 0.0	
19	8 16 57.38	24 59 53.5	67.42	19	9 52 5.0	17 36 0.0	
20	8 19 4.85	24 53 9.0	68.53	20	9 53 5.0	17 24 0.0	
21	8 21 12.05	24 46 17.8	69.63	21	9 54 5.0	17 12 0.0	
22	8 23 18.98	24 39 20.0	70.73	22	9 55 5.0	17 0 0.0	
23	8 25 25.64	24 32 15.6	71.80	23	9 56 5.0	16 48 0.0	
24	8 27 32.03	N. 24 25 4.8		24			

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
FRIDAY 9.				SUNDAY 11.			
0	10 3 28.10	N. 16 49 23.0	114.75	0	11 32 0.50	N. 6 34 20.1	11
1	10 5 22.17	16 37 54.5	115.42	1	11 33 49.19	6 20 23.6	11
2	10 7 16.04	16 26 22.0	116.08	2	11 35 37.86	6 6 24.9	11
3	10 9 9.71	16 14 45.5	116.77	3	11 37 26.53	5 52 24.2	11
4	10 11 3.20	16 3 4.9	117.42	4	11 39 15.20	5 38 21.5	11
5	10 12 56.49	15 51 20.4	118.05	5	11 41 3.88	5 24 16.8	11
6	10 14 49.59	15 39 32.1	118.72	6	11 42 52.56	5 10 10.2	11
7	10 16 42.52	15 27 39.8	119.33	7	11 44 41.26	4 56 1.7	11
8	10 18 35.26	15 15 43.8	119.97	8	11 46 29.97	4 41 51.3	11
9	10 20 27.83	15 3 44.0	120.58	9	11 48 18.71	4 27 39.1	11
10	10 22 20.22	14 51 40.5	121.20	10	11 50 7.48	4 13 25.1	11
11	10 24 12.45	14 39 33.3	121.80	11	11 51 56.28	3 59 9.5	11
12	10 26 4.51	14 27 22.5	122.40	12	11 53 45.12	3 44 52.1	14
13	10 27 56.41	14 15 8.1	122.98	13	11 55 34.00	3 30 33.1	14
14	10 29 48.15	14 2 50.2	123.58	14	11 57 22.92	3 16 12.5	14
15	10 31 39.73	13 50 28.7	124.15	15	11 59 11.90	3 1 50.3	14
16	10 33 31.16	13 38 3.8	124.72	16	12 1 0.94	2 47 26.6	14
17	10 35 22.45	13 25 35.5	125.28	17	12 2 50.04	2 33 1.4	14
18	10 37 13.59	13 13 3.8	125.83	18	12 4 39.20	2 18 34.8	14
19	10 39 4.59	13 0 28.8	126.40	19	12 6 28.43	2 4 6.9	14
20	10 40 55.45	12 47 50.4	126.93	20	12 8 17.74	1 49 37.6	14
21	10 42 46.18	12 35 8.8	127.47	21	12 10 7.14	1 35 6.9	14
22	10 44 36.78	12 22 24.0	128.02	22	12 11 56.62	1 20 35.1	14
23	10 46 27.26	N. 12 9 35.9	128.52	23	12 13 46.19	N. 1 6 2.0	14
SATURDAY 10.				MONDAY 12.			
0	10 48 17.62	N. 11 56 44.8	129.05	0	12 15 35.86	N. 0 51 27.8	14
1	10 50 7.86	11 43 50.5	129.55	1	12 17 25.63	0 36 52.5	14
2	10 51 57.99	11 30 53.2	130.05	2	12 19 15.51	0 22 16.1	14
3	10 53 48.01	11 17 52.9	130.57	3	12 21 5.50	N. 0 7 38.7	14
4	10 55 37.92	11 4 49.5	131.03	4	12 22 55.60	S. 0 6 59.7	14
5	10 57 27.73	10 51 43.3	131.53	5	12 24 45.82	0 21 39.0	14
6	10 59 17.45	10 38 34.1	132.00	6	12 26 36.18	0 36 19.2	14
7	11 1 7.07	10 25 22.1	132.47	7	12 28 26.66	0 51 0.2	14
8	11 2 56.60	10 12 7.3	132.93	8	12 30 17.29	1 5 42.0	14
9	11 4 46.05	9 58 49.7	133.40	9	12 32 8.05	1 20 24.5	14
10	11 6 35.42	9 45 29.3	133.83	10	12 33 58.96	1 35 7.7	14
11	11 8 24.71	9 32 6.3	134.28	11	12 35 50.03	1 49 51.6	14
12	11 10 13.92	9 18 40.6	134.72	12	12 37 41.26	2 4 36.0	14
13	11 12 3.07	9 5 12.3	135.13	13	12 39 32.65	2 19 20.9	14
14	11 13 52.15	8 51 41.5	135.57	14	12 41 24.21	2 34 6.4	14
15	11 15 41.18	8 38 8.1	135.98	15	12 43 15.94	2 48 52.2	14
16	11 17 30.15	8 24 32.2	136.38	16	12 45 7.85	3 3 38.4	14
17	11 19 19.08	8 10 53.9	136.80	17	12 46 59.95	3 18 25.0	14
18	11 21 7.95	7 57 13.1	137.18	18	12 48 52.23	3 33 11.8	14
19	11 22 56.79	7 43 30.0	137.58	19	12 50 44.72	3 47 58.8	14
20	11 24 45.59	7 29 44.5	137.95	20	12 52 37.40	4 2 46.0	14
21	11 26 34.35	7 15 56.8	138.35	21	12 54 30.29	4 17 33.3	14
22	11 28 23.09	7 2 6.7	138.70	22	12 56 23.39	4 32 20.6	14
23	11 30 11.81	6 48 14.5	139.07	23	12 58 16.71	4 47 7.9	14
24	11 32 0.50	N. 6 34 20.1		24	13 0 10.26	S. 5 1 55.1	14

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 13.				THURSDAY 15.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	13 0 10.26	S. 5 1 55.1	147.85	0	14 37 9.04	S. 16 27 55.9	132.50
1	13 2 4.03	5 16 42.2	147.82	1	14 39 20.10	16 41 10.9	131.82
2	13 3 58.04	5 31 29.1	147.77	2	14 41 31.64	16 54 21.8	131.12
3	13 5 52.28	5 46 15.7	147.73	3	14 43 43.67	17 7 28.5	130.40
4	13 7 46.77	6 1 2.1	147.67	4	14 45 56.19	17 20 30.9	129.65
5	13 9 41.51	6 15 48.1	147.58	5	14 48 9.21	17 33 28.8	128.96
6	13 11 36.50	6 30 33.6	147.50	6	14 50 22.72	17 46 22.2	128.13
7	13 13 31.76	6 45 18.6	147.42	7	14 52 36.74	17 59 11.0	127.32
8	13 15 27.28	7 0 3.1	147.32	8	14 54 51.26	18 11 54.9	126.52
9	13 17 23.08	7 14 47.0	147.18	9	14 57 6.29	18 24 34.0	125.76
10	13 19 19.15	7 29 30.1	147.07	10	14 59 21.83	18 37 8.2	124.83
11	13 21 15.51	7 44 12.5	146.93	11	15 1 37.89	18 49 37.2	123.97
12	13 23 12.15	7 58 54.1	146.78	12	15 3 54.46	19 2 1.0	123.10
13	13 25 9.09	8 13 34.8	146.62	13	15 6 11.56	19 14 19.6	122.20
14	13 27 6.33	8 28 14.5	146.45	14	15 8 29.18	19 26 32.8	121.27
15	13 29 3.87	8 42 53.2	146.27	15	15 10 47.32	19 38 40.4	120.32
16	13 31 1.72	8 57 30.8	146.08	16	15 13 6.00	19 50 42.3	119.35
17	13 32 59.89	9 12 7.3	145.85	17	15 15 25.20	20 2 38.4	118.35
18	13 34 58.38	9 26 42.4	145.65	18	15 17 44.94	20 14 28.5	117.33
19	13 36 57.20	9 41 16.3	145.40	19	15 20 5.22	20 26 12.5	116.30
20	13 38 56.35	9 55 48.7	145.17	20	15 22 26.03	20 37 50.3	115.25
21	13 40 55.84	10 10 19.7	144.90	21	15 24 47.38	20 49 21.8	114.17
22	13 42 55.67	10 24 49.1	144.63	22	15 27 9.27	21 0 46.8	113.08
23	13 44 55.85	S. 10 39 16.9	144.35	23	15 29 31.70	S. 21 12 5.3	111.95
WEDNESDAY 14.				FRIDAY 16.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	13 46 56.38	S. 10 53 43.0	144.05	0	15 31 54.67	S. 21 23 17.0	110.87
1	13 48 57.27	11 8 7.3	143.73	1	15 34 18.19	21 34 22.2	109.72
2	13 50 58.53	11 22 29.7	143.40	2	15 36 42.25	21 45 20.5	108.53
3	13 53 0.16	11 36 50.1	143.08	3	15 39 6.85	21 56 11.7	107.35
4	13 55 2.17	11 51 8.6	142.72	4	15 41 32.00	22 6 55.8	106.13
5	13 57 4.55	12 5 24.9	142.35	5	15 43 57.69	22 17 32.6	104.90
6	13 59 7.32	12 19 39.0	141.98	6	15 46 23.93	22 28 2.0	103.65
7	14 1 10.49	12 33 50.9	141.57	7	15 48 50.72	22 38 23.9	102.37
8	14 3 14.05	12 48 0.3	141.17	8	15 51 18.04	22 48 38.1	101.07
9	14 5 18.01	13 2 7.3	140.75	9	15 53 45.92	22 58 44.5	99.75
10	14 7 22.38	13 16 11.8	140.32	10	15 56 14.33	23 8 43.0	98.40
11	14 9 27.16	13 30 13.7	139.85	11	15 58 43.28	23 18 33.4	97.05
12	14 11 32.36	13 44 12.8	139.38	12	16 1 12.76	23 28 15.7	95.67
13	14 13 37.98	13 58 9.1	138.92	13	16 3 42.79	23 37 49.7	94.27
14	14 15 44.02	14 12 2.6	138.40	14	16 6 13.35	23 47 15.3	92.83
15	14 17 50.50	14 25 53.0	137.90	15	16 8 44.45	23 56 32.3	91.40
16	14 19 57.41	14 39 40.4	137.35	16	16 11 16.07	24 5 40.7	89.92
17	14 22 4.77	14 53 24.5	136.82	17	16 13 48.57	24 14 40.2	88.43
18	14 24 12.58	15 7 5.4	136.25	18	16 16 20.00	24 30.8	86.93
19	14 26 20.83	15 20 42.9	135.65	19	16 18	12.4	85.40
20	14 28 29.54	15 34 16.8	135.07	20	16 21	14.8	83.85
21	14 30 38.71	15 47 47.2	134.47	21	16 2	9.9	82.28
22	14 32 48.35	16 1 14.0	133.87	22	16	6	80.70
23	14 34 58.45	16 14	133.27	23	16	79.08	
24	14 37 9.04	S. 16 27					

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 17.				MONDAY 19.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	16 31 47.71	S. 25 13 20.3	77.45	0	18 43 23.28	S. 27 51 34.0	17.42
1	16 34 23.93	25 21 5.0	75.82	1	18 46 11.89	27 49 47.9	19.32
2	16 37 0.64	25 28 39.9	74.13	2	18 49 0.45	27 47 48.9	21.57
3	16 39 37.83	25 36 4.7	72.45	3	18 51 48.95	27 45 37.1	24.10
4	16 42 15.49	25 43 19.4	70.75	4	18 54 37.36	27 43 12.5	26.22
5	16 44 53.63	25 50 23.9	69.02	5	18 57 25.67	27 40 35.2	28.37
6	16 47 32.22	25 57 18.0	67.27	6	19 0 13.88	27 37 45.0	30.47
7	16 50 11.27	26 4 1.6	65.52	7	19 3 1.97	27 34 42.2	32.34
8	16 52 50.77	26 10 34.7	63.72	8	19 5 49.92	27 31 26.7	34.70
9	16 55 30.72	26 16 57.0	61.93	9	19 8 37.73	27 27 58.5	36.48
10	16 58 11.09	26 23 8.6	60.12	10	19 11 25.38	27 24 17.7	38.30
11	17 0 51.89	26 29 9.3	58.28	11	19 14 12.86	27 20 24.3	40.37
12	17 3 33.10	26 34 59.0	56.43	12	19 17 0.15	27 16 18.5	43.07
13	17 6 14.73	26 40 37.6	54.57	13	19 19 47.24	27 12 0.1	45.12
14	17 8 56.77	26 46 5.0	52.67	14	19 22 34.11	27 7 29.4	47.18
15	17 11 39.19	26 51 21.0	50.78	15	19 25 20.77	27 2 46.3	49.22
16	17 14 21.99	26 56 25.7	48.87	16	19 28 7.19	26 57 51.0	51.27
17	17 17 5.16	27 1 18.9	46.93	17	19 30 53.36	26 52 43.4	53.30
18	17 19 48.69	27 6 0.5	45.00	18	19 33 39.28	26 47 23.6	55.28
19	17 22 32.57	27 10 30.5	43.03	19	19 36 24.93	26 41 51.9	57.30
20	17 25 16.79	27 14 48.7	41.07	20	19 39 10.30	26 36 8.1	59.28
21	17 28 1.34	27 18 55.1	39.08	21	19 41 55.38	26 30 12.4	61.27
22	17 30 46.20	27 22 49.6	37.08	22	19 44 40.16	26 24 4.8	63.22
23	17 33 31.37	S. 27 26 32.1	35.07	23	19 47 24.63	S. 26 17 45.5	65.17
SUNDAY 18.				TUESDAY 20.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	17 36 16.83	S. 27 30 2.5	33.05	0	19 50 8.77	S. 26 11 14.5	67.10
1	17 39 2.58	27 33 20.8	31.02	1	19 52 52.58	26 4 31.9	69.02
2	17 41 48.59	27 36 26.9	28.97	2	19 55 36.06	25 57 37.8	70.90
3	17 44 34.87	27 39 20.7	26.92	3	19 58 19.18	25 50 32.4	72.80
4	17 47 21.39	27 42 2.2	24.85	4	20 1 1.95	25 43 15.6	74.67
5	17 50 8.14	27 44 31.3	22.77	5	20 3 44.35	25 35 47.6	76.52
6	17 52 55.11	27 46 47.9	20.70	6	20 6 26.37	25 28 8.5	78.35
7	17 55 42.29	27 48 52.1	18.60	7	20 9 8.01	25 20 18.4	80.17
8	17 58 29.67	27 50 43.7	16.48	8	20 11 49.27	25 12 17.4	81.97
9	18 1 17.23	27 52 22.6	14.40	9	20 14 30.12	25 4 5.6	83.75
10	18 4 4.96	27 53 49.0	12.28	10	20 17 10.57	24 55 43.1	85.52
11	18 6 52.84	27 55 2.7	10.15	11	20 19 50.61	24 47 10.0	87.25
12	18 9 40.87	27 56 3.6	8.02	12	20 22 30.23	24 38 26.5	88.98
13	18 12 29.03	27 56 51.7	5.90	13	20 25 9.42	24 29 32.6	90.70
14	18 15 17.30	27 57 27.1	3.77	14	20 27 48.19	24 20 28.4	92.37
15	18 18 5.68	27 57 49.7	1.62	15	20 30 26.51	24 11 14.2	94.05
16	18 20 54.14	27 57 59.4	0.52	16	20 33 4.40	24 1 49.9	95.70
17	18 23 42.67	27 57 56.3	2.67	17	20 35 41.84	23 52 15.7	97.32
18	18 26 31.26	27 57 40.3	4.80	18	20 38 18.82	23 42 31.8	98.93
19	18 29 19.90	27 57 11.5	6.97	19	20 40 55.35	23 32 38.2	100.53
20	18 32 8.57	27 56 29.7	9.10	20	20 43 31.43	23 22 35.0	102.08
21	18 34 57.26	27 55 35.1	11.25	21	20 46 7.03	23 12 22.5	103.65
22	18 37 45.95	27 54 27.6	13.38	22	20 48 42.17	23 2 0.6	105.1
23	18 40 34.63	27 53 7.3	15.55	23	20 51 16.84	22 51 29.6	106.6
24	18 43 23.28	S. 27 51 34.0		24	20 53 51.04	S. 22 40 49.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 21.				FRIDAY 23.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	20 53 51.04	S. 22 40 49.6	108.15	0	22 47 54.60	S. 11 53 37.4	154.53
1	20 56 24.76	22 30 0.7	109.63	1	22 50 6.51	11 38 10.2	155.00
2	20 58 57.99	22 19 2.9	111.05	2	22 52 18.05	11 22 40.2	155.47
3	21 1 30.75	22 7 56.6	112.48	3	22 54 29.22	11 7 7.4	155.92
4	21 4 3.02	21 56 41.7	113.88	4	22 56 40.04	10 51 31.9	156.33
5	21 6 34.82	21 45 18.4	115.27	5	22 58 50.50	10 35 53.9	156.75
6	21 9 6.13	21 33 46.8	116.62	6	23 1 0.62	10 20 13.4	157.15
7	21 11 36.94	21 22 7.1	117.95	7	23 3 10.40	10 4 30.5	157.52
8	21 14 7.27	21 10 19.4	119.25	8	23 5 19.84	9 48 45.4	157.88
9	21 16 37.11	20 58 23.9	120.55	9	23 7 28.95	9 32 58.1	158.22
10	21 19 6.46	20 46 20.6	121.83	10	23 9 37.74	9 17 8.8	158.55
11	21 21 35.32	20 34 9.6	123.07	11	23 11 46.21	9 1 17.5	158.85
12	21 24 3.68	20 21 51.2	124.28	12	23 13 54.37	8 45 24.4	159.15
13	21 26 31.56	20 9 25.5	125.50	13	23 16 2.22	8 29 29.5	159.42
14	21 28 58.95	19 56 52.5	126.67	14	23 18 9.76	8 13 33.0	159.70
15	21 31 25.85	19 44 12.5	127.85	15	23 20 17.01	7 57 34.8	159.93
16	21 33 52.27	19 31 25.4	128.97	16	23 22 23.97	7 41 35.2	160.15
17	21 36 18.19	19 18 31.6	130.08	17	23 24 30.65	7 25 34.3	160.38
18	21 38 43.64	19 5 31.1	131.20	18	23 26 37.04	7 9 32.0	160.58
19	21 41 8.60	18 52 23.9	132.25	19	23 28 43.16	6 53 28.5	160.75
20	21 43 33.08	18 39 10.4	133.32	20	23 30 49.02	6 37 24.0	160.93
21	21 45 57.08	18 25 50.5	134.35	21	23 32 54.61	6 21 18.4	161.08
22	21 48 20.60	18 12 24.4	135.37	22	23 34 59.94	6 5 11.9	161.23
23	21 50 43.64	S. 17 58 52.2	136.35	23	23 37 5.02	S. 5 49 4.5	161.35
THURSDAY 22.				SATURDAY 24.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	21 53 6.22	S. 17 45 14.1	137.32	0	23 39 9.85	S. 5 32 56.4	161.47
1	21 55 28.32	17 31 30.2	138.27	1	23 41 14.45	5 16 47.6	161.55
2	21 57 49.95	17 17 40.6	139.20	2	23 43 18.81	5 0 38.3	161.65
3	22 0 11.12	17 3 45.4	140.10	3	23 45 22.95	4 44 28.4	161.72
4	22 2 31.82	16 49 44.8	140.98	4	23 47 26.86	4 28 18.1	161.75
5	22 4 52.07	16 35 38.9	141.85	5	23 49 30.56	4 12 7.6	161.82
6	22 7 11.86	16 21 27.8	142.70	6	23 51 34.04	3 55 56.7	161.82
7	22 9 31.19	16 7 11.6	143.52	7	23 53 37.32	3 39 45.8	161.85
8	22 11 50.08	15 52 50.5	144.33	8	23 55 40.41	3 23 34.7	161.83
9	22 14 8.53	15 38 24.5	145.10	9	23 57 43.29	3 7 23.7	161.83
10	22 16 26.53	15 23 53.9	145.88	10	23 59 45.99	2 51 12.7	161.78
11	22 18 44.09	15 9 18.6	146.60	11	0 1 48.51	2 35 2.0	161.77
12	22 21 1.22	14 54 39.0	147.33	12	0 3 50.85	2 18 51.4	161.70
13	22 23 17.92	14 39 55.0	148.03	13	0 5 53.02	2 2 41.2	161.63
14	22 25 34.20	14 25 6.8	148.73	14	0 7 55.03	1 46 31.4	161.55
15	22 27 50.06	14 10 14.4	149.38	15	0 9 56.87	1 30 22.1	161.45
16	22 30 5.51	13 55 18.1	150.03	16		1 14 13.4	161.35
17	22 32 20.54	13 40 17.9	150.67	17		0 58 5.3	161.23
18	22 34 35.16	13 25 13.9	151.27	18		0 41 57.9	161.12
19	22 36 49.38	13 10 6.3	151.87	19		0 25 51.2	160.95
20	22 39 3.20	12 54 55.1	152.42	20		S. 0 9 45.5	160.82
21	22 41 16.63	12 39 30.6	152.98	21		N. 0 6 19.4	160.63
22	22 43 29.67	12 23 7.7	153.52	22		0 22 23.2	160.47
23	22 45 42.33	12 7 0.0	154.03	23		38 26.0	160.27
24	22 47 54.60	S. 11 53 37.4	154.53	24		54 27.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. for
SUNDAY 25.				TUESDAY 27.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	0 28 7.25	N. 0 54 27.6	160.07	0	2 4 12.19	N. 12 59 31.4	137
1	0 30 7.82	1 10 28.0	159.87	1	2 6 13.64	13 13 16.8	136
2	0 32 8.29	1 26 27.2	159.63	2	2 8 15.22	13 26 57.9	136
3	0 34 8.66	1 42 25.0	159.38	3	2 10 16.92	13 40 34.6	135
4	0 36 8.95	1 58 21.3	159.15	4	2 12 18.75	13 54 7.0	134
5	0 38 9.16	2 14 16.2	158.88	5	2 14 20.72	14 7 34.8	133
6	0 40 9.29	2 30 9.5	158.60	6	2 16 22.82	14 20 58.1	133
7	0 42 9.36	2 46 1.1	158.33	7	2 18 25.07	14 34 16.9	132
8	0 44 9.35	3 1 51.1	158.03	8	2 20 27.47	14 47 31.0	131
9	0 46 9.28	3 17 39.3	157.72	9	2 22 30.00	15 0 40.3	130
10	0 48 9.17	3 33 25.6	157.42	10	2 24 32.69	15 13 44.9	129
11	0 50 9.00	3 49 10.1	157.07	11	2 26 35.54	15 26 44.7	129
12	0 52 8.78	4 4 52.5	156.73	12	2 28 38.54	15 39 39.6	128
13	0 54 8.52	4 20 32.9	156.38	13	2 30 41.70	15 52 29.6	127
14	0 56 8.23	4 36 11.2	156.02	14	2 32 45.01	16 5 14.5	126
15	0 58 7.91	4 51 47.3	155.63	15	2 34 48.49	16 17 54.4	125
16	1 0 7.57	5 7 21.1	155.27	16	2 36 52.14	16 30 29.2	124
17	1 2 7.21	5 22 52.7	154.87	17	2 38 55.96	16 42 58.8	124
18	1 4 6.83	5 38 21.9	154.47	18	2 40 59.95	16 55 23.2	123
19	1 6 6.44	5 53 48.7	154.05	19	2 43 4.11	17 7 42.4	122
20	1 8 6.05	6 9 13.0	153.62	20	2 45 8.45	17 19 56.2	121
21	1 10 5.66	6 24 34.7	153.20	21	2 47 12.97	17 32 4.6	120
22	1 12 5.27	6 39 53.9	152.78	22	2 49 17.67	17 44 7.5	119
23	1 14 4.90	N. 6 55 10.3	152.28	23	2 51 22.55	N. 17 56 5.0	118
MONDAY 26.				WEDNESDAY 28.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	1 16 4.53	N. 7 10 24.0	151.82	0	2 53 27.62	N. 18 7 56.9	117
1	1 18 4.19	7 25 34.9	151.35	1	2 55 32.87	18 19 43.2	116
2	1 20 3.88	7 40 43.0	150.87	2	2 57 38.31	18 31 23.8	115
3	1 22 3.59	7 55 48.2	150.35	3	2 59 43.94	18 42 58.8	114
4	1 24 3.34	8 10 50.3	149.85	4	3 1 49.76	18 54 27.9	113
5	1 26 3.13	8 25 49.4	149.33	5	3 3 55.78	19 5 51.2	112
6	1 28 2.96	8 40 45.4	148.82	6	3 6 1.99	19 17 8.6	111
7	1 30 2.84	8 55 38.3	148.27	7	3 8 8.39	19 28 20.1	110
8	1 32 2.78	9 10 27.9	147.70	8	3 10 15.00	19 39 25.6	109
9	1 34 2.76	9 25 14.1	147.17	9	3 12 21.80	19 50 25.0	108
10	1 36 2.81	9 39 57.1	146.58	10	3 14 28.80	20 1 18.4	107
11	1 38 2.92	9 54 36.6	146.00	11	3 16 36.00	20 12 5.5	106
12	1 40 3.10	10 9 12.6	145.42	12	3 18 43.40	20 22 46.5	105
13	1 42 3.36	10 23 45.1	144.80	13	3 20 51.01	20 33 21.2	104
14	1 44 3.69	10 38 13.9	144.20	14	3 22 58.81	20 43 49.6	103
15	1 46 4.11	10 52 39.1	143.58	15	3 25 6.82	20 54 11.6	102
16	1 48 4.61	11 7 0.6	142.95	16	3 27 15.04	21 4 27.2	101
17	1 50 5.20	11 21 18.3	142.30	17	3 29 23.45	21 14 36.3	100
18	1 52 5.89	11 35 32.1	141.67	18	3 31 32.07	21 24 38.9	99
19	1 54 6.67	11 49 42.1	141.00	19	3 33 40.90	21 34 34.9	98
20	1 56 7.56	12 3 48.1	140.33	20	3 35 49.93	21 44 24.3	97
21	1 58 8.55	12 17 50.1	139.65	21	3 37 59.16	21 54 7.0	96
22	2 0 9.65	12 31 48.0	138.97	22	3 40 8.60	22 3 43.0	94
23	2 2 10.86	12 45 41.8	138.27	23	3 42 18.24	22 13 12.2	93
24	2 4 12.19	N. 12 59 31.4		24	3 44 28.08	N. 22 22 34.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
THURSDAY 29.				FRIDAY 30.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	3 44 28.08	N. 22 22 34.5	92.53	0	4 37 22.30	N. 25 31 20.2	62.80
1	3 46 38.12	22 31 50.0	91.42	1	4 39 36.77	25 37 37.0	61.48
2	3 48 48.37	22 40 58.5	90.25	2	4 41 51.40	25 43 45.9	60.15
3	3 50 58.81	22 50 0.0	89.08	3	4 44 6.18	25 49 46.8	58.82
4	3 53 9.46	22 58 54.5	87.92	4	4 46 21.10	25 55 39.7	57.48
5	3 55 20.31	23 7 42.0	86.72	5	4 48 36.17	26 1 24.6	56.13
6	3 57 31.36	23 16 22.3	85.52	6	4 50 51.38	26 7 1.4	54.79
7	3 59 42.60	23 24 55.4	84.33	7	4 53 6.73	26 12 30.1	53.42
8	4 1 54.04	23 33 21.4	83.12	8	4 55 22.21	26 17 50.6	52.07
9	4 4 5.67	23 41 40.1	81.88	9	4 57 37.82	26 23 3.0	50.70
10	4 6 17.50	23 49 51.4	80.68	10	4 59 53.55	26 28 7.2	49.33
11	4 8 29.51	23 57 55.5	79.43	11	5 2 9.39	26 33 3.2	47.95
12	4 10 41.73	24 5 52.1	78.20	12	5 4 25.37	26 37 50.9	46.58
13	4 12 54.13	24 13 41.3	76.97	13	5 6 41.45	26 42 30.4	45.18
14	4 15 6.72	24 21 23.1	75.70	14	5 8 57.64	26 47 1.5	43.82
15	4 17 19.49	24 28 57.3	74.43	15	5 11 13.93	26 51 24.4	42.42
16	4 19 32.44	24 36 23.9	73.18	16	5 13 30.33	26 55 38.9	41.02
17	4 21 45.57	24 43 43.0	71.90	17	5 15 46.81	26 59 45.0	39.63
18	4 23 58.88	24 50 54.4	70.62	18	5 18 3.39	27 3 42.8	38.22
19	4 26 12.36	24 57 58.1	69.33	19	5 20 20.05	27 7 32.1	36.83
20	4 28 26.02	25 4 54.1	68.05	20	5 22 36.79	27 11 13.1	35.42
21	4 30 39.84	25 11 42.4	66.73	21	5 24 53.60	27 14 45.6	34.02
22	4 32 53.83	25 18 22.8	65.45	22	5 27 10.48	27 18 9.7	32.60
23	4 35 7.99	25 24 55.5	64.12	23	5 29 27.43	27 21 25.3	31.18
24	4 37 22.30	N. 25 31 20.2		24	5 31 44.44	N. 27 24 32.4	

PHASES OF THE MOON.

	^d ^h ^m
● New Moon - - - - -	2 19 43.8
☾ First Quarter - - - - -	10 22 29.7
○ Full Moon - - - - -	18 3 51.7
☾ Last Quarter - - - - -	24 17 59.3

☾ Apogee - - - - -	
☾ Perigee - - - - -	

MEAN TIME.								
LUNAR DISTANCES.								
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .
		° ' "		° ' "		° ' "		° ' "
4	Pollux E.	23 54 55	2928	22 23 11	2938	20 51 40	2947	19 20 1
	Jupiter E.	46 20 40	2994	44 50 20	3004	43 20 12	3014	41 50
	Regulus E.	60 33 32	2931	59 1 53	2940	57 30 25	2949	55 59
	Mars E.	64 49 15	3105	63 21 12	3114	61 53 19	3124	60 25
5	SUN W.	25 9 29	3379	26 32 10	3382	27 54 47	3387	29 17
	Jupiter E.	34 23 40	3074	32 54 58	3084	31 26 29	3094	29 58
	Regulus E.	48 25 25	3000	46 55 12	3008	45 25 9	3016	43 55
	Mars E.	53 9 50	3174	51 43 10	3183	50 16 40	3190	48 50
	Saturn E.	121 58 0	2970	120 27 10	2977	118 56 28	2983	117 25
6	SUN W.	36 8 36	3415	37 30 35	3419	38 52 30	3424	40 14
	Jupiter E.	22 40 26	3172	21 13 43	3188	19 47 20	3208	18 21
	Regulus E.	36 28 17	3065	34 59 24	3071	33 30 39	3079	32 2
	Mars E.	41 40 48	3234	40 15 19	3240	38 49 57	3247	37 24
	Spica ♀ E.	90 25 15	3035	88 55 47	3041	87 26 25	3046	85 57
	Saturn E.	109 55 3	3020	108 25 15	3026	106 55 34	3030	105 25
7	SUN W.	47 2 21	3446	48 23 46	3449	49 45 8	3450	51 6
	Pollux W.	12 20 42	3099	13 48 53	3095	15 17 9	3093	16 45
	Regulus E.	24 41 43	3133	23 14 14	3145	21 46 59	3158	20 20
	Mars E.	30 20 18	3282	28 55 45	3288	27 31 19	3293	26 6
	Spica ♀ E.	78 32 12	3070	77 3 26	3073	75 34 44	3076	74 6
	Saturn E.	97 59 17	3053	96 30 10	3056	95 1 7	3059	93 32
8	SUN W.	57 52 44	3456	59 13 57	3455	60 35 11	3455	61 56
	Pollux W.	24 7 16	3087	25 35 41	3086	27 4 8	3084	28 32
	Spica ♀ E.	66 43 22	3083	65 14 52	3084	63 46 23	3083	62 17
	Saturn E.	86 7 37	3066	84 38 46	3066	83 9 55	3066	81 41
9	SUN W.	68 43 13	3439	70 4 45	3436	71 26 21	3431	72 48
	Pollux W.	35 55 38	3069	37 24 26	3065	38 53 18	3061	40 22
	Jupiter E.	13 24 14	3326	14 47 56	3286	16 12 24	3255	17 37
	Spica ♀ E.	54 54 58	3072	53 26 14	3069	51 57 26	3065	50 28
	Saturn E.	74 16 18	3054	72 47 12	3051	71 18 2	3047	69 48
10	SUN W.	79 38 4	3394	81 0 28	3386	82 23 1	3378	83 45
	Pollux W.	47 48 44	3026	49 18 25	3018	50 48 16	3010	52 18
	Jupiter W.	24 48 59	3145	26 16 14	3131	27 43 46	3118	29 11
	Regulus W.	11 53 45	3269	13 18 33	3214	14 44 26	3170	16 11
	Spica ♀ E.	43 2 45	3034	41 33 14	3027	40 3 35	3020	38 33
	Saturn E.	62 21 2	3014	60 51 7	3007	59 21 3	3000	57 50
	Antares E.	88 53 35	3024	87 23 52	3016	85 53 59	3009	84 23
11	SUN W.	90 41 59	3317	92 5 51	3306	93 29 56	3293	94 54
	Pollux W.	59 51 5	2954	61 22 16	2943	62 53 41	2931	64 25
	Jupiter W.	36 34 23	3043	38 3 43	3029	39 33 20	3016	41 3
	Regulus W.	23 33 45	3018	25 3 36	3000	26 33 49	2982	28 4
	Mars W.	15 38 22	3221	17 4 6	3198	18 30 18	3177	19 56
	Spica ♀ E.	31 2 25	2971	29 31 36	2963	28 0 37	2954	26 29
	Saturn E.	50 17 11	2947	48 45 52	2937	47 14 20	2927	45 42
	Antares E.	76 51 2	2952	75 19 49	2942	73 48 23	2931	72 16
12	SUN W.	101 59 47	3211	103 25 43	3195	104 51 58	3181	106 18

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			[°] ['] ["]		[°] ['] ["]		[°] ['] ["]		[°] ['] ["]	
4	Pollux	E.	17 49 16	2969	16 18 24	2981	14 47 47	2994	13 17 27	3008
	Jupiter	E.	40 20 32	3033	38 51 0	3043	37 21 41	3053	35 52 34	3064
	Regulus	E.	54 28 2	2966	52 57 7	2974	51 26 22	2983	49 55 48	2992
	Mars	E.	58 58 8	3141	57 30 48	3150	56 3 39	3158	54 36 40	3166
5	SUN	W.	30 39 44	3396	32 2 5	3401	33 24 21	3406	34 46 31	3410
	Jupiter	E.	28 30 9	3117	27 2 20	3129	25 34 46	3142	24 7 27	3157
	Regulus	E.	42 25 32	3031	40 55 57	3039	39 26 32	3048	37 57 19	3057
	Mars	E.	47 24 8	3205	45 58 5	3213	44 32 11	3220	43 6 25	3227
	Saturn	E.	115 55 29	2997	114 25 12	3002	112 55 2	3008	111 24 59	3014
6	SUN	W.	41 36 3	3432	42 57 43	3435	44 19 20	3439	45 40 52	3442
	Jupiter	E.	16 55 49	3260	15 30 51	3294	- - -	- - -	- - -	- - -
	Regulus	E.	30 33 38	3095	29 5 22	3105	27 37 18	3114	26 9 25	3123
	Mars	E.	35 59 36	3259	34 34 37	3265	33 9 44	3271	31 44 58	3276
	Spica μ	E.	84 27 59	3056	82 58 55	3060	81 29 56	3064	80 1 2	3067
	Saturn	E.	103 56 28	3038	102 27 3	3043	100 57 43	3047	99 28 28	3050
7	SUN	W.	52 27 46	3454	53 49 2	3455	55 10 16	3455	56 31 30	3455
	Pollux	W.	18 13 46	3091	19 42 7	3090	21 10 29	3089	22 38 52	3088
	Regulus	E.	18 53 19	3192	17 27 0	3215	16 1 8	3242	14 35 49	3275
	Mars	E.	24 42 45	3304	23 18 38	3311	21 54 39	3318	20 30 48	3325
	Spica μ	E.	72 37 29	3080	71 8 55	3082	69 40 23	3083	68 11 52	3083
	Saturn	E.	92 3 9	3063	90 34 14	3065	89 5 21	3065	87 36 29	3065
8	SUN	W.	63 17 43	3452	64 39 1	3449	66 0 22	3446	67 21 46	3444
	Pollux	W.	30 1 7	3081	31 29 40	3078	32 58 16	3076	34 26 55	3073
	Spica μ	E.	60 49 22	3082	59 20 50	3079	57 52 15	3078	56 23 38	3075
	Saturn	E.	80 12 11	3064	78 43 17	3061	77 14 20	3060	75 45 21	3056
9	SUN	W.	74 9 49	3421	75 31 42	3415	76 53 42	3408	78 15 49	3401
	Pollux	W.	41 51 20	3051	43 20 30	3045	44 49 47	3039	46 19 12	3033
	Jupiter	W.	19 3 1	3209	20 28 59	3190	21 55 20	3173	23 22 1	3159
	Spica μ	E.	48 59 36	3056	47 30 33	3051	46 1 24	3046	44 32 8	3040
	Saturn	E.	68 19 27	3038	66 50 1	3032	65 20 28	3027	63 50 49	3021
10	SUN	W.	85 8 36	3359	86 31 39	3350	87 54 53	3339	89 18 20	3328
	Pollux	W.	53 48 28	2993	55 18 49	2984	56 49 22	2974	58 20 7	2964
	Jupiter	W.	30 39 37	3093	32 7 55	3080	33 36 29	3068	35 5 18	3055
	Regulus	W.	17 38 38	3105	19 6 41	3079	20 35 16	3057	22 4 18	3037
	Spica μ	E.	37 3 50	3006	35 33 44	2998	34 3 28	2989	32 33 2	2981
	Saturn	E.	56 20 27	2983	54 49 55	2976	53 19 12	2967	51 48 18	2957
	Antares	E.	82 53 44	2992	80 3 21	2983	79 52 47	2973	78 22 1	2963
11	SUN	W.	96 18 51	3267	97 41 32	3254	99 8 46	3240	100 34 8	3225
	Pollux	W.	65 57 15	2907	67 25 28	2894	69 1 51	2881	70 34 34	2868
	Jupiter	W.	42 33 23	2989	44 50 29	2975	45 34 34	2961	47 5 36	2946
	Regulus	W.	29 35 20	2989	31 37 29	2975	32 38 14	2916	34 10 12	2900
	Mars	---	---	---	21 51 19	2119	24 19 7	3102	25 47 14	3084
	Spica μ	---	---	---	32 29 28	2928	21 54 49	2920	20 22 56	2913
	Saturn	---	---	---	23 28 94	2894	41 5 56	2881	39 33 13	2869
	Antares	---	---	---	47 28 94	2894	67 40 11	2881	66 7 28	2868
12	SUN	---	---	---	---	3132	110 40 3	3116	112 7 53	3098

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12	Pollux W.	72° 7' 34"	2855	73° 40' 51"	2841	75° 14' 26"	2825	76° 48' 21"	2811
	Jupiter W.	48 36 57	2931	50 8 36	2916	51 40 34	2901	53 12 52	2886
	Regulus W.	35 42 31	2884	37 15 10	2868	38 48 10	2852	40 21 31	2833
	Mars W.	27 15 43	3067	28 44 33	3050	30 13 44	3033	31 43 16	3011
	Spica π E.	18 50 53	2908	17 18 44	2904	15 46 30	2903	14 14 15	2901
	Saturn E.	38 0 15	2857	36 27 1	2845	34 53 32	2833	33 19 47	2820
	Antares E.	64 34 28	2854	63 1 10	2840	61 27 34	2826	59 53 40	2811
13	Sun W.	113 36 5	3082	115 4 37	3065	116 33 30	3046	118 2 46	3028
	Pollux W.	84 42 50	2732	86 18 47	2716	87 55 5	2699	89 31 46	2682
	Jupiter W.	60 59 27	2803	62 33 51	2786	64 8 37	2769	65 43 46	2752
	Regulus W.	48 13 41	2751	49 49 13	2734	51 25 8	2715	53 1 28	2697
	Mars W.	39 16 21	2928	40 48 5	2909	42 20 12	2891	43 52 42	2873
	Saturn E.	25 26 59	2760	23 51 39	2750	22 16 6	2741	20 40 21	2726
	Antares E.	51 59 13	2732	50 23 16	2716	48 46 58	2700	47 10 18	2684
	α Aquilæ E.	101 15 55	3603	99 57 24	3578	98 38 26	3554	97 19 2	3531
14	Jupiter W.	73 45 21	2662	75 22 52	2644	77 0 47	2626	78 39 7	2607
	Regulus W.	61 9 7	2607	62 47 52	2589	64 27 2	2571	66 6 37	2553
	Mars W.	51 41 8	2779	53 16 3	2761	54 51 22	2742	56 27 6	2723
	Spica π W.	- - -	-	- - -	-	10 36 23	2693	12 13 12	2685
	Antares E.	39 1 17	2596	37 22 17	2579	35 42 53	2561	34 3 5	2544
	α Aquilæ E.	90 35 56	3430	89 14 13	3413	87 52 11	3396	86 29 50	3381
15	Jupiter W.	86 57 3	2517	88 37 53	2499	90 19 8	2480	92 0 49	2463
	Regulus W.	74 30 50	2461	76 12 58	2444	77 55 30	2426	79 38 28	2409
	Mars W.	64 32 4	2629	66 10 19	2610	67 49 0	2592	69 28 6	2574
	Spica π W.	20 30 38	2490	22 12 5	2467	23 54 5	2445	25 36 36	2423
	Antares E.	25 38 4	2458	23 55 52	2441	22 13 16	2425	20 30 17	2410
	α Aquilæ E.	79 34 17	3325	78 10 35	3319	76 46 45	3314	75 22 50	3311
16	Jupiter W.	100 35 18	2378	102 19 24	2363	104 3 52	2347	105 48 43	2332
	Regulus W.	88 19 26	2324	90 4 51	2309	91 50 38	2293	93 36 48	2277
	Mars W.	77 49 47	2487	79 31 19	2470	81 13 15	2453	82 55 34	2438
	Spica π W.	34 16 22	2329	36 1 39	2311	37 47 22	2295	39 33 29	2279
	Saturn W.	15 29 59	2401	17 13 32	2367	18 57 54	2337	20 42 59	2312
	α Aquilæ E.	68 23 5	3327	66 59 25	3338	65 35 58	3352	64 12 47	3370
	Fomalhaut E.	94 30 55	2502	92 49 44	2486	91 8 11	2470	89 26 15	2454
17	Jupiter W.	114 38 19	2262	116 25 14	2249	118 12 28	2238	119 59 59	2227
	Mars W.	91 32 34	2364	93 17 0	2352	95 1 44	2339	96 46 47	2327
	Spica π W.	48 29 50	2205	50 18 10	2191	52 6 51	2179	53 55 50	2166
	Saturn W.	29 36 40	2214	31 24 47	2198	33 13 17	2184	35 2 9	2170
	Fomalhaut E.	80 51 34	2390	79 7 45	2380	77 23 42	2371	75 39 25	2362
	α Pegasi E.	101 33 34	2555	99 53 37	2538	98 13 17	2523	96 32 36	2508
18	Mars W.	105 36 6	2276	107 22 41	2268	109 9 28	2260	110 56 26	2253
	Spica π W.	63 5 3	2116	64 55 38	2107	66 46 26	2099	68 37 26	209
	Saturn W.	44 11 17	2113	46 1 56	2104	47 52 49	2096	49 43 55	208
	Antares W.	17 11 13	2124	19 1 36	2113	20 52 15	2104	22 43 9	2090
	Fomalhaut E.	66 55 29	2337	65 10 23	2336	63 25 16	2336	61 40 9	2338
	α Pegasi E.	88 4 41	2455	86 22 25	2448	84 39 59	2443	82 57 26	2439
19	Spica π W.	77 54 50	2067	79 46 40	2064	81 38 35	2061	83 30 34	2060

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		° ' "		° ' "		° ' "		° ' "	
12	Pollux W.	78 22 34	2795	79 57 8	2781	81 32 1	2765	83 7 15	2749
	Jupiter W.	54 45 29	2870	56 18 27	2854	57 51 45	2837	59 25 25	2820
	Regulus W.	41 55 13	2818	43 29 17	2801	45 3 43	2785	46 38 31	2768
	Mars W.	33 13 9	2998	34 43 24	2981	36 14 1	2963	37 45 0	2946
	Spica π E.	12 42 7	2920	11 10 14	2946	- - -	- - -	- - -	- - -
	Saturn E.	31 45 45	2808	30 11 28	2795	28 36 54	2783	27 2 4	2772
	Antares E.	58 19 27	2796	56 44 54	2781	55 10 1	2766	53 34 48	2749
13	SUN W.	119 32 23	3010	121 2 23	2992	122 32 46	2974	124 3 31	2955
	Pollux W.	91 8 50	2665	92 46 17	2648	94 24 7	2630	96 2 21	2612
	Jupiter W.	67 19 17	2734	68 55 12	2716	70 31 31	2698	72 8 14	2680
	Regulus W.	54 38 12	2679	56 15 20	2662	57 52 51	2643	59 30 47	2626
	Mars W.	45 25 35	2855	46 58 52	2836	48 32 33	2818	50 6 38	2798
	Saturn E.	19 4 26	2729	17 28 25	2728	15 52 22	2732	14 16 25	2742
	Antares E.	45 33 16	2666	43 55 51	2649	42 18 3	2632	40 39 52	2615
	α Aquilæ E.	95 59 12	3508	94 38 57	3487	93 18 19	3467	91 57 18	3448
14	Jupiter W.	80 17 52	2588	81 57 3	2571	83 36 38	2553	85 16 38	2535
	Regulus W.	67 46 37	2534	69 27 3	2517	71 7 53	2499	72 49 8	2480
	Mars W.	58 3 15	2704	59 39 49	2685	61 16 49	2666	62 54 14	2648
	Spica π W.	13 51 6	2605	15 29 54	2571	17 9 29	2541	18 49 45	2514
	Antares E.	32 22 53	2527	30 42 17	2510	29 1 17	2492	27 19 53	2474
	α Aquilæ E.	85 7 12	3367	83 44 18	3355	82 21 10	3344	80 57 49	3334
15	Jupiter W.	93 42 54	2446	95 25 24	2429	97 8 18	2412	98 51 36	2395
	Regulus W.	81 21 50	2391	83 5 37	2374	84 49 49	2357	86 34 25	2341
	Mars W.	71 7 37	2586	72 47 33	2568	74 27 53	2550	76 8 38	2503
	Spica π W.	27 19 38	2403	29 3 8	2384	30 47 5	2365	32 31 30	2346
	Antares E.	18 46 56	2395	17 3 14	2381	15 19 12	2368	13 34 52	2356
	α Aquilæ E.	73 58 51	3310	72 34 51	3310	71 10 51	3313	69 46 55	3319
16	Jupiter W.	107 33 56	2317	109 19 31	2302	111 5 27	2289	112 51 43	2275
	Regulus W.	95 23 21	2262	97 10 16	2247	98 57 33	2234	100 45 10	2221
	Mars W.	84 38 15	2422	86 21 18	2407	88 4 43	2393	89 48 28	2378
	Spica π W.	41 20 0	2263	43 6 54	2247	44 54 11	2233	46 41 50	2219
	Saturn W.	22 28 41	2289	24 14 56	2268	26 1 43	2249	27 48 58	2231
	α Aquilæ E.	62 49 56	3391	61 27 29	3416	60 5 31	3446	58 44 6	3483
	Fomalhaut E.	87 43 57	2440	86 1 19	2427	84 18 22	2414	82 35 7	2401
17	Jupiter W.	121 47 47	2216	123 35 51	2206	- - -	- - -	- - -	- - -
	Mars W.	98 32 7	2315	100 17 44	2304	102 3 37	2295	103 49 44	2285
	Spica π W.	55 45 9	2155	57 34 44	2145	59 24 34	2134	61 14 41	2124
	Saturn W.	36 51 21	2157	38 40 54	2145	40 30 45	2134	42 20 53	2123
	Fomalhaut E.	73 54 56	2355	72 10 16	2348	70 25 27	2343	68 40 31	2340
	α Pegasi E.	94 51 34	2495	93 10 14	2483	91 28 37	2473	89 46 46	2463
18	Mars W.	112 43 35	2246	114 30 54	2241	116 18 20	2236	118 5 54	2232
	Spica π W.	70 28 37	2086	72 19 58	2080	74 11 28	2075	76 3 6	2071
	Saturn W.	51 35 12	2081	53 26 40	2075	55 18 17	2070	57 10 3	2065
	Antares W.	24 34 15	2088	26 25 33	2081	28 17 2	2075	30 8 39	2070
	Fomalhaut E.	59 55 5	2341	58 10 5	2346	56 25 13	2353	54 11 21	2363
	α Pegasi E.	81 14 47	2436	79 32 3	2435	77 49 18	2434	- - -	436
19	Spica π W.	85 22 35	2059	87 14 38	2059	89 6 4	- - -	- - -	59

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Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	
19	Saturn W.	59 1 56	2061	60 53 55	2058	62 45 59	2055	64 38 8	
	Antares W.	32 0 24	2066	33 52 15	2063	35 44 11	2060	37 36 12	
	Fomalhaut E.	52 56 3	2374	51 11 51	2387	49 27 58	2404	47 44 29	
	α Pegasi E.	74 23 49	2439	72 41 10	2444	70 58 38	2450	69 16 15	
20	Saturn W.	73 59 13	2054	75 51 23	2056	77 43 30	2059	79 35 32	
	Antares W.	46 56 37	2059	48 48 40	2061	50 40 39	2063	52 32 35	
	Fomalhaut E.	39 15 52	2584	37 36 35	2634	35 58 26	2690	34 21 33	
	α Pegasi E.	60 48 7	2529	59 7 34	2550	57 27 30	2574	55 47 59	
21	Saturn W.	88 54 8	2088	90 45 25	2095	92 36 32	2102	94 27 28	
	Antares W.	61 50 35	2092	63 41 46	2099	65 32 46	2107	67 23 35	
	α Pegasi E.	47 41 4	2789	46 6 22	2841	44 32 47	2899	43 0 27	
	α Arietis E.	86 45 3	2150	84 55 20	2157	83 5 48	2165	81 16 28	
22	Saturn W.	103 38 52	2156	105 28 26	2167	107 17 44	2178	109 6 45	
	Antares W.	76 34 32	2159	78 24 1	2170	80 13 14	2180	82 2 12	
	α Arietis E.	72 13 11	2224	70 25 19	2235	68 37 44	2247	66 50 27	
	SUN E.	126 16 20	2471	124 34 26	2481	122 52 46	2492	121 11 21	
23	Antares W.	91 2 48	2249	92 50 2	2262	94 36 58	2274	96 23 36	
	α Aquilæ W.	50 17 14	3886	51 30 48	3817	52 45 33	3757	54 1 20	
	α Arietis E.	57 58 59	2332	56 13 46	2347	54 28 55	2364	52 44 28	
	SUN E.	112 48 18	2564	111 8 33	2576	109 29 5	2589	107 49 55	
24	Antares W.	105 12 4	2351	106 56 49	2364	108 41 15	2378	110 25 21	
	α Aquilæ W.	60 32 35	3515	61 52 43	3491	63 13 17	3470	64 34 15	
	α Arietis E.	44 8 40	2476	42 26 53	2499	40 45 38	2522	39 4 56	
	SUN E.	99 38 43	2672	98 1 25	2686	96 24 26	2700	94 47 46	
25	α Aquilæ W.	71 23 9	3400	72 45 26	3394	74 7 49	3392	75 30 15	
	Fomalhaut W.	39 18 20	2943	40 49 44	2924	42 21 32	2909	43 53 40	
	α Arietis E.	30 50 36	2700	29 13 56	2741	27 38 10	2786	26 3 24	
	SUN E.	86 49 6	2785	85 14 19	2799	83 39 50	2813	82 5 39	
26	α Aquilæ W.	82 22 10	3407	83 44 19	3413	85 6 21	3421	86 28 14	
	Fomalhaut W.	51 37 19	2867	53 10 20	2866	54 43 23	2866	56 16 25	
	α Pegasi W.	34 56 15	3790	36 11 28	3707	37 28 8	3635	38 46 5	
	SUN E.	74 19 16	2896	72 46 52	2909	71 14 45	2923	69 42 56	
27	α Aquilæ W.	93 14 43	3490	94 35 18	3505	95 55 37	3520	97 15 39	
	Fomalhaut W.	64 0 52	2885	65 33 30	2890	67 6 2	2895	68 38 27	
	α Pegasi W.	45 30 2	3368	46 52 55	3341	48 16 19	3319	49 40 9	
	SUN E.	62 7 56	3001	60 37 44	3014	59 7 48	3026	57 38 7	
28	Fomalhaut W.	76 18 30	2935	77 50 4	2943	79 21 29	2950	80 52 44	
	α Pegasi W.	56 44 3	3236	58 9 30	3229	59 35 5	3223	61 0 47	
	SUN E.	50 13 30	3099	48 45 19	3110	47 17 22	3122	45 49 39	
29	Fomalhaut W.	88 26 28	3000	89 56 41	3008	91 26 44	3017	92 56 33	
	α Pegasi W.	68 10 19	3209	69 36 18	3209	71 2 16	3210	72	
	α Arietis W.	24 33 13	3153	26 0 19	3125	27 27 58	3103	28	
	SUN E.	38 34 39	3194	37 8 22	3205	35 42 19	3218	34	
30	α Pegasi W.	79 37 12	3228	81 2 48	3233	82 28 18	3238	83	
	α Arietis W.	36 20 43	3040	37 50 6	3037	39 19 33	3034	40	

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19	Saturn W.	66° 30' 20"	2052	68° 22' 33"	2052	70° 14' 47"	2052	72° 7' 1"	2053
	Antares W.	39 28 15	2057	41 20 20	2057	43 12 26	2057	45 4 32	2057
	Fomalhaut E.	46 1 29	2447	44 19 1	2474	42 37 12	2506	40 56 7	2542
	α Pegasi E.	67 34 4	2469	65 52 7	2480	64 10 26	2494	62 29 5	2511
20	Saturn W.	81 27 30	2066	83 19 22	2071	85 11 6	2077	87 2 41	2082
	Antares W.	54 24 25	2071	56 16 9	2076	58 7 45	2081	59 59 14	2086
	Fomalhaut E.	32 46 9	2835	31 12 27	2928	29 40 43	3036	28 11 15	3167
	α Pegasi E.	54 9 5	2631	52 30 52	2665	50 53 25	2702	49 16 47	2743
21	Saturn W.	96 18 11	2119	98 8 41	2127	99 58 59	2136	101 49 3	2146
	Antares W.	69 14 13	2122	71 4 38	2131	72 54 50	2140	74 44 48	2149
	α Pegasi E.	41 29 29	3036	40 0 1	3119	38 32 14	3211	37 6 18	3317
	α Arietis E.	79 27 20	2182	77 38 25	2192	75 49 45	2202	74 1 20	2212
22	Saturn W.	110 55 30	2199	112 43 59	2211	114 32 10	2224	116 20 2	2237
	Antares W.	83 50 53	2202	85 39 17	2213	87 27 25	2224	89 15 16	2237
	α Arietis E.	65 3 29	2273	63 16 50	2287	61 30 32	2302	59 44 35	2316
	SUN E.	119 30 12	2514	117 49 18	2526	116 8 41	2538	114 28 21	2551
23	Antares W.	98 9 55	2299	99 55 56	2312	101 41 38	2326	103 27 0	2340
	α Aquilæ W.	55 18 4	3655	56 35 39	3613	57 53 59	3576	59 13 0	3544
	α Arietis E.	51 0 26	2398	49 16 49	2417	47 33 39	2436	45 50 56	2455
	SUN E.	106 11 4	2616	104 32 31	2629	102 54 16	2643	101 16 20	2657
24	Antares W.	112 9 9	2404	113 52 38	2418	115 35 47	2431	117 18 38	2445
	α Aquilæ W.	65 55 33	3437	67 17 8	3423	68 38 58	3414	70 0 59	3406
	α Arietis E.	37 24 47	2572	35 45 14	2600	34 6 19	2630	32 28 5	2663
	SUN E.	93 11 24	2728	91 35 21	2743	89 59 38	2757	88 24 13	2770
25	α Aquilæ W.	76 52 43	3391	78 15 10	3393	79 37 34	3397	80 59 54	3401
	Fomalhaut W.	45 26 3	2886	46 58 40	2878	48 31 27	2873	50 4 21	2870
	α Arietis E.	24 29 45	2898	22 57 23	2969	21 26 32	3054	19 57 26	3159
	SUN E.	80 31 47	2841	78 58 12	2855	77 24 56	2869	75 51 57	2883
26	α Aquilæ W.	87 49 56	3440	89 11 27	3451	90 32 46	3463	91 53 52	3476
	Fomalhaut W.	57 49 26	2869	59 22 24	2873	60 55 18	2876	62 28 8	2880
	α Pegasi W.	40 5 9	3520	41 25 11	3473	42 46 5	3433	44 7 44	3399
	SUN E.	68 11 23	2950	66 40 7	2962	65 9 7	2975	63 38 23	2989
27	α Aquilæ W.	98 35 22	3555	99 54 45	3574	101 13 48	3594	102 32 29	3614
	Fomalhaut W.	70 10 44	2908	71 42 53	2914	73 14 54	2920	74 46 46	2927
	α Pegasi W.	51 4 21	3222	52 28 53	3267	53 53 43	3255	55 18 47	3245
	SUN E.	56 8 42	3031	57 30 82	3062	53 10 36	3075	51 41 56	3087
28	Fomalhaut W.	82 23 49	2963	83 55 13	2974	85 25 30	2983	86 56 4	2991
	α Pegasi W.	62 26 34	3231	63 58 29	3212	65 18 23	3210	66 44 20	3209
	SUN E.	61 30 11	3121	62 57 17	3158	64 27 57	3169	66 1 11	3181
29	Fomalhaut W.	93 25 10	3044	94 56 16	3044	97 25 4	3054	98 54 10	3064
	α Pegasi W.	51 4 21	3222	52 28 53	3267	53 53 43	3255	55 18 47	3245
	α Arietis W.	37 24 47	2572	35 45 14	2600	34 6 19	2630	32 28 5	2663
	SUN E.	93 11 24	2728	91 35 21	2743	89 59 38	2757	88 24 13	2770
30	α Pegasi W.	51 4 21	3222	52 28 53	3267	53 53 43	3255	55 18 47	3245
	α Arietis W.	37 24 47	2572	35 45 14	2600	34 6 19	2630	32 28 5	2663

CONFIGURATIONS OF THE SATELLITES OF JUPITER.

At 9^h 30^m, MEAN TIME.

Day of the Month.	West.			East.		
1	4.	.1	○	2.	3.	
2	4.	2.	○	1.	3.	
3	.4	.2	3. 1. ○			
4	.4	3.	○	.2		1. ○
5	.4	.3	○	.1	2.	
6		2. .4	1. 3. ○			
7		.2	○	.4	.1	.3
8		.1	○	2.	.4	3.
9		2.	○	1.	3.	.4
10		.2	.1 3. ○			.4
11		3.	○	1.	.2	4.
12	.1 ●	.3	○	2.		4.
13		2. .3	1. ○		4.	
14		.2	○	.1	.3	4.
15		1.	○	.4.	.2	.3
16		4.	○	1.	3.	○
17		4.	.2 .1 ○	3.		
18	4.	3.	○	1. 2.		
19	4.	.3	○	2.		.1 ●
20	.4	.3 2.	1. ○			
21	.4	.2	○	.1	.3	
22	.4	1.	○	.2	.3	
23		.4	○	2.	1.	3.
24	● .4	.2 .1	○	3.		
25	.2 ●	3.	○	1.	.4	
26		.3	.1 ○	2.		.4
27	○ 1.	.3	2. ○			.4
28	.3 ●	.2	○	.1		4.
29		1.	○	.2	.3	4.
30			○	2. .1	3.	4.

This Table represents, at 9^h 30^m after *Mean Noon* of each day of the month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral circle (○) at the left or right hand of the page, denotes that the Satellite placed by the *on* the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the *Jupiter*.

ECLIPSES OF THE SATELLITES OF JUPITER.

SATELLITE.	Day of the Month.	Mean Time.	Sidereal Time.	PHASE as seen in an inverting Telescope.
I.	1	^h 19 ^m 43 ^s 41.3	^h 0 ^m 25 ^s 58.2	Em.
	3	14 12 29.2	19 1 44.8	Em.
	5	8 41 11.8	13 37 26.1	Em.
	7	3 10 0.1	8 13 13.1	Em.
	8	21 38 42.4	2 48 54.2	Em.
	10	16 7 30.9	21 24 41.3	Em.
	12	10 36 13.3	16 0 22.4	Em.
	14	5 5 0.8	10 36 8.6	Em.
	15	23 33 43.8	5 11 50.3	Em.
	17	18 2 30.6	23 47 35.9	Em.
	19	12 31 12.9	18 23 16.8	Em.
	21	6 59 59.5	12 59 2.1	Em.
	23	1 28 42.0	7 34 43.3	Em.
	24	19 57 28.4	2 10 28.4	Em.
	26	14 26 10.2	20 46 8.9	Em.
	28	8 54 56.1	15 21 53.5	Em.
	30	3 23 37.4	9 57 33.5	Em.
II.	4	3 15 51.7	8 7 16.0	Em.
	7	16 33 31.4	21 38 56.5	Em.
	11	5 51 21.1	11 10 46.8	Em.
	14	19 8 57.8	0 42 24.3	Em.
	18	8 26 38.7	14 14 5.9	Em.
	21	21 44 9.4	3 45 37.3	Em.
	25	11 1 43.1	17 17 11.7	Em.
III.	6	20 5 54.4	1 7 57.7	Im.
	6	23 38 21.8	4 41 0.1	Em.
	14	0 5 3.3	5 35 21.8	Im.
	14	3 37 20.8	9 8 14.2	Em.
	21	4 4 38.4	10 3 12.2	Im.
	21	7 36 46.2	13 35 54.8	Em.
	28	11 35 56.9	18 3 20.8	Em.
IV.	7	12 23 29.5	17 28 13.5	Im.
	7	17 8 6.0	22 13 36.7	Em.
	24	6 24 59.8	12 35 45.9	Im.
	24	11 8 44.8	17 20 17.8	Em.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^d .778395, Days.	From Mean Noon of January 1.	
	At Mean Midnight,						Day of the Year.	Fraction of the Year.
	Logarithm of							
	A	B	C	D				
1	-0.7798	-1.2849	+9.3683	-0.8790	19 17 47.37	70	151	.413
2	0.7579	1.2873	9.3751	0.8786	19 13 51.46	71	152	.416
3	0.7347	1.2896	9.3818	0.8782	19 9 55.54	72	153	.419
4	-0.7100	-1.2918	+9.3885	-0.8779	19 5 59.62	73	154	.422
5	0.6838	1.2938	9.3951	0.8776	19 2 3.70	74	155	.424
6	0.6558	1.2956	9.4015	0.8773	18 58 7.79	75	156	.427
7	-0.6257	-1.2974	+9.4079	-0.8770	18 54 11.87	76	157	.430
8	0.5932	1.2990	9.4143	0.8768	18 50 15.96	77	158	.433
9	0.5580	1.3005	9.4206	0.8766	18 46 20.04	78	159	.435
10	-0.5196	-1.3019	+9.4268	-0.8765	18 42 24.14	79	160	.438
11	0.4773	1.3031	9.4329	0.8764	18 38 28.23	80	161	.441
12	0.4304	1.3042	9.4389	0.8763	18 34 32.32	81	162	.444
13	-0.3776	-1.3052	+9.4449	-0.8762	18 30 36.41	82	163	.446
14	0.3173	1.3061	9.4508	0.8762	18 26 40.50	83	164	.449
15	0.2473	1.3068	9.4567	0.8762	18 22 44.59	84	165	.452
16	-0.1636	-1.3075	+9.4625	-0.8763	18 18 48.68	85	166	.454
17	0.0596	1.3080	9.4682	0.8764	18 14 52.76	86	167	.457
18	9.9225	1.3083	9.4738	0.8765	18 10 56.84	87	168	.460
19	-9.7210	-1.3086	+9.4794	-0.8766	18 7 0.93	88	169	.463
20	-9.3329	1.3088	9.4849	0.8768	18 3 5.01	89	170	.465
21	+8.9801	1.3088	9.4903	0.8770	17 59 9.09	90	171	.468
22	+9.6089	-1.3087	+9.4957	-0.8773	17 55 13.19	91	172	.471
23	9.8555	1.3085	9.5010	0.8776	17 51 17.27	92	173	.474
24	0.0117	1.3081	9.5062	0.8779	17 47 21.36	93	174	.476
25	+0.1263	-1.3077	+9.5114	-0.8783	17 43 25.46	94	175	.479
26	0.2168	1.3071	9.5165	0.8787	17 39 29.55	95	176	.482
27	0.2915	1.3064	9.5215	0.8791	17 35 33.64	96	177	.485
28	+0.3552	-1.3056	+9.5265	-0.8795	17 31 37.73	97	178	.487
29	0.4106	1.3046	9.5314	0.8800	17 27 41.81	98	179	.490
30	0.4296	1.3036	9.5362	0.8806	17 23 45.90	99	180	.493
			+9.5410	-0.8811	17 19 49.98	100	181	.496

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Diff. for 1 hr.
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Sat.	1	6 40 43.16	10.341	N.23 7 57.1	10.57	1 8.70	3 23.40	0.40
Sun.	2	6 44 51.34	10.330	23 3 43.4	11.58	1 8.66	3 34.98	0.40
Mon.	3	6 48 59.25	10.318	22 59 5.6	12.58	1 8.62	3 46.30	0.40
Tues.	4	6 53 6.87	10.304	22 54 3.6	13.58	1 8.58	3 57.33	0.40
Wed.	5	6 57 14.16	10.289	22 48 37.6	14.57	1 8.54	4 8.03	0.40
Thur.	6	7 1 21.10	10.274	22 42 47.9	15.56	1 8.49	4 18.38	0.40
Frid.	7	7 5 27.68	10.258	22 36 34.5	16.54	1 8.44	4 28.37	0.40
Sat.	8	7 9 33.86	10.241	22 29 57.5	17.51	1 8.39	4 37.98	0.40
Sun.	9	7 13 39.64	10.223	22 22 57.2	18.48	1 8.33	4 47.17	0.40
Mon.	10	7 17 44.99	10.205	22 15 33.7	19.44	1 8.27	4 55.95	0.40
Tues.	11	7 21 49.90	10.185	22 7 47.2	20.38	1 8.21	5 4.29	0.40
Wed.	12	7 25 54.33	10.165	21 59 38.0	21.33	1 8.15	5 12.14	0.40
Thur.	13	7 29 58.30	10.145	21 51 6.1	22.26	1 8.08	5 19.53	0.40
Frid.	14	7 34 1.79	10.124	21 42 11.8	23.18	1 8.02	5 26.43	0.40
Sat.	15	7 38 4.77	10.103	21 32 55.4	24.10	1 7.95	5 32.83	0.40
Sun.	16	7 42 7.25	10.082	21 23 17.0	25.00	1 7.88	5 38.74	0.40
Mon.	17	7 46 9.21	10.060	21 13 16.9	25.90	1 7.81	5 44.12	0.40
Tues.	18	7 50 10.65	10.038	21 2 55.2	26.79	1 7.73	5 48.99	0.40
Wed.	19	7 54 11.56	10.015	20 52 12.2	27.67	1 7.65	5 53.33	0.40
Thur.	20	7 58 11.93	9.992	20 41 8.1	28.54	1 7.58	5 57.13	0.40
Frid.	21	8 2 11.74	9.969	20 29 43.1	29.40	1 7.50	6 0.38	0.40
Sat.	22	8 6 11.00	9.947	20 17 57.4	30.25	1 7.42	6 3.08	0.40
Sun.	23	8 10 9.72	9.924	20 5 51.3	31.10	1 7.34	6 5.24	0.40
Mon.	24	8 14 7.89	9.900	19 53 24.9	31.93	1 7.26	6 6.85	0.40
Tues.	25	8 18 5.48	9.877	19 40 38.5	32.75	1 7.17	6 7.88	0.40
Wed.	26	8 22 2.52	9.853	19 27 32.5	33.56	1 7.09	6 8.36	0.40
Thur.	27	8 25 58.98	9.828	19 14 7.0	34.36	1 7.01	6 8.26	0.40
Frid.	28	8 29 54.85	9.804	19 0 22.3	35.15	1 6.92	6 7.58	0.40
Sat.	29	8 33 50.15	9.780	18 46 18.7	35.93	1 6.84	6 6.31	0.40
Sun.	30	8 37 44.86	9.754	18 31 56.5	36.69	1 6.75	6 4.47	0.40
Mon.	31	8 41 38.96	9.730	18 17 15.9	37.44	1 6.67	6 2.10	0.40
Tues.	32	8 45 32.47		N.18 2 17.3		1 6.58	5 58.97	

* Mean Time of the Semidiameter passing may be found by subtracting 0^m19 from the Sid.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Right Ascension.	Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Sat.	1	6 40 42.57	N.23 7 57.7	15 45.0	3 23.37	6 37 19.20
Sun.	2	6 44 50.72	23 3 44.1	15 45.0	3 34.95	6 41 15.77
Mon.	3	6 48 58.60	22 59 6.3	15 45.0	3 46.27	6 45 12.33
Tues.	4	6 53 6.19	22 54 4.4	15 45.0	3 57.30	6 49 8.89
Wed.	5	6 57 13.45	22 48 38.6	15 45.1	4 8.00	6 53 5.45
Thur.	6	7 1 20.36	22 42 49.0	15 45.1	4 18.35	6 57 2.01
Frid.	7	7 5 26.91	22 36 35.7	15 45.1	4 28.34	7 0 58.57
Sat.	8	7 9 33.07	22 29 58.8	15 45.1	4 37.95	7 4 55.12
Sun.	9	7 13 38.82	22 22 58.7	15 45.2	4 47.14	7 8 51.68
Mon.	10	7 17 44.15	22 15 35.3	15 45.2	4 55.92	7 12 48.23
Tues.	11	7 21 49.04	22 7 48.9	15 45.3	5 4.26	7 16 44.78
Wed.	12	7 25 53.45	21 59 39.8	15 45.3	5 12.11	7 20 41.34
Thur.	13	7 29 57.40	21 51 8.1	15 45.4	5 19.50	7 24 37.90
Frid.	14	7 34 0.87	21 42 13.9	15 45.4	5 26.41	7 28 34.46
Sat.	15	7 38 3.83	21 32 57.6	15 45.5	5 32.81	7 32 31.02
Sun.	16	7 42 6.30	21 23 19.3	15 45.5	5 38.72	7 36 27.58
Mon.	17	7 46 8.25	21 13 19.3	15 45.6	5 44.10	7 40 24.15
Tues.	18	7 50 9.68	21 2 57.8	15 45.7	5 48.97	7 44 20.71
Wed.	19	7 54 10.58	20 52 14.9	15 45.8	5 53.31	7 48 17.27
Thur.	20	7 58 10.94	20 41 10.8	15 45.8	5 57.12	7 52 13.82
Frid.	21	8 2 10.74	20 29 46.0	15 45.9	6 0.37	7 56 10.37
Sat.	22	8 6 10.00	20 18 0.4	15 46.0	6 3.07	8 0 6.93
Sun.	23	8 10 8.71	20 5 54.4	15 46.1	6 5.23	8 4 3.48
Mon.	24	8 14 6.88	19 53 28.1	15 46.2	6 6.85	8 8 0.03
Tues.	25	8 18 4.47	19 40 41.8	15 46.3	6 7.88	8 11 56.59
Wed.	26	8 22 1.51	19 27 35.8	15 46.3	6 8.36	8 15 53.15
Thur.	27	8 25 57.97	19 14 10.4	15 46.5	6 8.26	8 19 49.71
Frid.	28	8 29 53.85	19 0 25.8	15 46.6	6 7.58	8 23 46.27
Sat.	29	8 33 49.15	18 46 22.3	15 46.7	6 6.32	8 27 42.83
Sun.	30	8 37 42.57	18 31 0.1	15 46.8	6 4.48	8 31 39.39
Mon.			19 7	15 46.9	6 2.03	8 35 35.95
Tues.			1 1	15 47.0	5 58.99	8 39 32.51

be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	99 21 5 1	N. 0 79	0 0072385	14 56 8	14 53 9	54 50 9	54 40 3
2	100 18 18 3	0 86	0 0072394	14 51 2	14 49 0	54 30 6	54 22 3
3	101 15 31 6	0 91	0 0072379	14 47 0	14 45 3	54 14 9	54 8 8
4	102 12 44 9	0 92	0 0072337	14 44 0	14 43 1	54 4 1	54 0 8
5	103 9 58 1	0 91	0 0072269	14 42 7	14 42 5	53 59 1	53 58 7
6	104 7 11 2	0 87	0 0072174	14 43 0	14 43 9	54 0 2	54 3 6
7	105 4 24 3	0 79	0 0072055	14 45 3	14 47 3	54 8 9	54 16 2
8	106 1 37 3	0 70	0 0071911	14 50 0	14 53 1	54 25 9	54 37 6
9	106 58 50 2	0 58	0 0071745	14 57 0	15 1 4	54 51 8	55 8 0
10	107 56 3 1	0 46	0 0071557	15 6 6	15 12 3	55 26 8	55 47 8
11	108 53 16 0	0 32	0 0071350	15 18 5	15 25 3	56 10 7	56 35 6
12	109 50 28 8	0 19	0 0071123	15 32 5	15 40 1	57 2 2	57 29 9
13	110 47 41 7	N. 0 07	0 0070878	15 47 8	15 55 7	57 58 3	58 27 2
14	111 44 54 9	S. 0 04	0 0070616	16 3 5	16 11 0	58 55 8	59 23 3
15	112 42 8 2	0 13	0 0070339	16 18 0	16 24 4	59 49 1	60 12 6
16	113 39 21 9	0 19	0 0070047	16 30 0	16 34 6	60 33 0	60 50 0
17	114 36 35 9	0 22	0 0069740	16 38 1	16 40 3	61 2 6	61 10 8
18	115 33 50 4	0 22	0 0069421	16 41 2	16 40 9	61 14 3	61 13 2
19	116 31 5 5	0 19	0 0069088	16 39 3	16 36 4	61 7 2	60 56 7
20	117 28 21 2	0 14	0 0068741	16 32 5	16 27 6	60 42 2	60 24 2
21	118 25 37 3	S. 0 06	0 0068379	16 21 9	16 15 5	60 3 2	59 39 9
22	119 22 54 4	N. 0 04	0 0068003	16 8 7	16 1 6	59 14 9	58 48 7
23	120 20 12 4	0 16	0 0067609	15 54 4	15 47 2	58 22 4	57 56 1
24	121 17 31 5	0 29	0 0067199	15 40 2	15 33 4	57 30 1	57 5 3
25	122 14 51 5	0 42	0 0066770	15 26 9	15 20 9	56 41 6	56 19 3
26	123 12 12 6	0 55	0 0066323	15 15 2	15 10 0	55 58 6	55 39 6
27	124 9 34 7	0 66	0 0065854	15 5 3	15 1 0	55 22 3	55 6 6
28	125 6 57 9	0 77	0 0065364	14 57 3	14 53 9	54 52 7	54 40 4
29	126 4 22 2	0 85	0 0064850	14 51 0	14 48 5	54 29 7	54 20 5
30	127 1 47 6	0 89	0 0064315	14 46 3	14 44 6	54 12 6	54 2 2
31	127 59 13 9	0 91	0 0063754	14 43 3	14 42 3	54 1 4	53 5
32	128 56 41 3	N. 0 90	0 0063170	14 41 7	14 41 4	53 55 6	53 5

MEAN TIME.

Day of the Week.	Day of the Month.	THE MOON'S							
		Longitude.				Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
Sat.	1	83 42 55.7	89 49 12.8	N. 4 6 2.1	N. 4 23 8.5	28.2	23 44.8		
Sun.	2	95 53 37.4	101 56 17.4	4 37 8.4	4 47 56.0	29.2	♂		
Mon.	3	107 57 20.7	113 56 55.3	4 55 26.9	4 59 39.3	0.6	0 36.8		
Tues.	4	119 55 11.2	125 52 19.4	5 0 32.6	4 58 8.5	1.6	1 26.8		
Wed.	5	131 48 32.8	137 44 6.4	4 52 30.6	4 43 43.0	2.6	2 14.0		
Thur.	6	143 39 18.0	149 34 28.0	4 31 51.9	4 17 4.0	3.6	2 58.4		
Frid.	7	155 30 0.2	161 26 20.4	3 59 28.0	3 39 12.6	4.6	3 40.4		
Sat.	8	167 23 57.9	173 23 23.6	3 16 28.4	2 51 25.8	5.6	4 21.0		
Sun.	9	179 25 12.1	185 29 58.3	2 24 17.6	1 55 16.6	6.6	5 1.0		
Mon.	10	191 38 19.9	197 50 54.5	1 24 37.7	N. 0 52 37.2	7.6	5 41.7		
Tues.	11	204 8 20.1	210 31 13.8	N. 0 19 33.9	S. 0 14 13.1	8.6	6 24.5		
Wed.	12	217 0 9.2	223 35 38.2	S. 0 48 20.0	1 22 21.3	9.6	7 10.7		
Thur.	13	230 18 6.7	237 7 53.0	1 55 49.4	2 28 12.6	10.6	8 1.7		
Frid.	14	244 5 7.2	251 9 48.3	2 58 58.1	3 27 29.9	11.6	8 58.5		
Sat.	15	258 21 44.1	265 40 27.0	3 53 12.1	4 15 28.9	12.6	10 0.9		
Sun.	16	273 5 17.4	280 35 20.8	4 33 46.0	4 47 33.7	13.6	11 7.0		
Mon.	17	288 9 30.2	295 46 29.6	4 56 26.7	5 0 7.9	14.6	12 13.4		
Tues.	18	303 24 56.0	311 3 22.4	4 58 28.9	4 51 29.2	15.6	13 16.6		
Wed.	19	318 40 24.7	326 14 42.7	4 39 19.7	4 22 18.5	16.6	14 15.0		
Thur.	20	333 45 6.3	341 10 34.4	4 0 52.2	3 35 32.1	17.6	15 8.4		
Frid.	21	348 30 22.3	355 43 55.2	3 6 55.5	2 35 39.6	18.6	15 58.1		
Sat.	22	2 50 53.9	9 51 8.9	2 2 23.1	1 27 44.5	19.6	16 45.4		
Sun.	23	16 44 44.0	23 31 48.8	S. 0 52 19.9	S. 0 16 42.4	20.6	17 31.8		
Mon.	24	30 12 41.9	36 47 45.3	N. 0 18 36.9	N. 0 53 10.6	21.6	18 18.7		
Tues.	25	43 17 26.4	49 42 12.3	1 26 33.9	1 58 25.0	22.6	19 6.8		
Wed.	26	56 2 32.7	62 18 56.0	2 28 24.1	2 56 15.1	23.6	19 56.7		
Thur.	27	68 31 50.5	74 41 41.8	3 21 42.4	3 44 33.9	24.6	20 48.3		
Frid.	28	80 48 55.0	86 34 50.6	4 4 38.4	4 21 46.7	25.6	21 40.7		
Sat.	29	92 56 49.7	98 28 8.6	4 35 50.8	4 46 45.6	26.6	22 32.8		
Sun.	30	104 50 2.1	110 22 5.4	4 54 26.6	4 58 50.7	27.6	23 23.3		
Mon.	31	1		4 59 57.5	4 57 47.2	28.6	♂		
Tues.	32	1		52 22.8	N. 4 43 47.6	29.6	0 11.3		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
SATURDAY 1.				MONDAY 3.			
0	5 31 44.44	N.27 24 32.4	29.77	0	7 20 45.59	N.27 8 8.6	37.9
1	5 34 1.51	27 27 31.0	28.37	1	7 22 58.96	27 4 26.2	38.7
2	5 36 18.62	27 30 21.2	26.93	2	7 25 12.14	27 0 36.0	39.4
3	5 38 35.78	27 33 2.8	25.52	3	7 27 25.11	26 56 38.0	40.3
4	5 40 52.98	27 35 35.9	24.10	4	7 29 37.88	26 52 32.3	41.2
5	5 43 10.21	27 38 0.5	22.67	5	7 31 50.44	26 48 18.9	42.2
6	5 45 27.47	27 40 16.5	21.25	6	7 34 2.78	26 43 57.9	43.2
7	5 47 44.76	27 42 24.0	19.83	7	7 36 14.91	26 39 29.3	44.2
8	5 50 2.06	27 44 23.0	18.40	8	7 38 26.82	26 34 53.2	45.2
9	5 52 19.38	27 46 13.4	16.97	9	7 40 38.50	26 30 9.5	46.2
10	5 54 36.70	27 47 55.2	15.55	10	7 42 49.96	26 25 18.4	47.2
11	5 56 54.02	27 49 28.5	14.12	11	7 45 1.19	26 20 19.8	48.2
12	5 59 11.34	27 50 53.2	12.70	12	7 47 12.19	26 15 13.9	49.2
13	6 1 28.65	27 52 9.4	11.25	13	7 49 22.95	26 10 0.6	50.2
14	6 3 45.94	27 53 16.9	9.85	14	7 51 33.48	26 4 40.0	51.2
15	6 6 3.21	27 54 16.0	8.42	15	7 53 43.76	25 59 12.2	52.2
16	6 8 20.45	27 55 6.5	6.98	16	7 55 53.80	25 53 37.2	53.2
17	6 10 37.66	27 55 48.4	5.57	17	7 58 3.59	25 47 55.0	54.2
18	6 12 54.84	27 56 21.8	4.15	18	8 0 13.13	25 42 5.7	55.2
19	6 15 11.97	27 56 46.7	2.73	19	8 2 22.42	25 36 9.4	56.2
20	6 17 29.05	27 57 3.1	1.30	20	8 4 31.46	25 30 6.0	57.2
21	6 19 46.08	27 57 10.9	0.10	21	8 6 40.25	25 23 55.6	58.2
22	6 22 3.04	27 57 10.3	1.53	22	8 8 48.78	25 17 38.4	59.2
23	6 24 19.95	N.27 57 1.1	2.93	23	8 10 57.05	N.25 11 14.3	60.2
SUNDAY 2.				TUESDAY 4.			
0	6 26 36.77	N.27 56 43.5	4.35	0	8 13 5.05	N.25 4 43.3	61.2
1	6 28 53.52	27 56 17.4	5.75	1	8 15 12.80	24 58 5.6	62.2
2	6 31 10.19	27 55 42.9	7.17	2	8 17 20.28	24 51 21.1	63.2
3	6 33 26.77	27 54 59.9	8.57	3	8 19 27.49	24 44 30.0	64.2
4	6 35 43.26	27 54 8.5	9.95	4	8 21 34.44	24 37 32.3	65.2
5	6 37 59.65	27 53 8.8	11.37	5	8 23 41.12	24 30 28.0	66.2
6	6 40 15.94	27 52 0.6	12.75	6	8 25 47.53	24 23 17.2	67.2
7	6 42 32.12	27 50 44.1	14.15	7	8 27 53.67	24 15 59.9	68.2
8	6 44 48.18	27 49 19.2	15.52	8	8 29 59.54	24 8 36.2	69.2
9	6 47 4.12	27 47 46.1	16.92	9	8 32 5.14	24 1 6.2	70.2
10	6 49 19.94	27 46 4.6	18.28	10	8 34 10.47	23 53 29.8	71.2
11	6 51 35.63	27 44 14.9	19.67	11	8 36 15.52	23 45 47.2	72.2
12	6 53 51.19	27 42 16.9	21.03	12	8 38 20.30	23 37 58.4	73.2
13	6 56 6.61	27 40 10.7	22.40	13	8 40 24.80	23 30 3.5	74.2
14	6 58 21.88	27 37 56.3	23.75	14	8 42 29.03	23 22 2.4	75.2
15	7 0 37.00	27 35 33.8	25.12	15	8 44 32.98	23 13 55.3	76.2
16	7 2 51.97	27 33 3.1	26.47	16	8 46 36.66	23 5 42.3	77.2
17	7 5 6.77	27 30 24.3	27.82	17	8 48 40.06	22 57 23.3	78.2
18	7 7 21.42	27 27 37.4	29.15	18	8 50 43.18	22 48 58.4	79.2
19	7 9 35.89	27 24 42.5	30.48	19	8 52 46.03	22 40 27.6	80.2
20	7 11 50.20	27 21 39.6	31.82	20	8 54 48.61	22 31 51	81.2
21	7 14 4.32	27 18 28.7	33.13	21	8 56 50.91	22 23 8	82.2
22	7 16 18.27	27 15 9.9	34.45	22	8 58 52.94	22 14 20	83.2
23	7 18 32.03	27 11 43.2	35.77	23	9 0 54.69	22 5 27	84.2
24	7 20 45.59	N.27 8 8.6		24	9 2 56.18	N.21 56 28	85.2

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 5.				FRIDAY 7.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	9 2 56.18	N. 21 56 28.2	90.78	0	10 35 16.26	N. 13 12 43.6	125.02
1	9 4 57.39	21 47 23.5	91.68	1	10 37 6.58	13 0 13.5	125.53
2	9 6 58.33	21 38 13.4	92.60	2	10 38 56.75	12 47 40.3	126.05
3	9 8 58.99	21 28 57.8	93.48	3	10 40 46.76	12 35 4.0	126.57
4	9 10 59.39	21 19 36.9	94.27	4	10 42 36.63	12 22 24.6	127.05
5	9 12 59.51	21 10 10.7	95.25	5	10 44 26.34	12 9 42.3	127.53
6	9 14 59.37	21 0 39.2	96.12	6	10 46 15.92	11 56 57.1	128.03
7	9 16 58.96	20 51 2.5	96.98	7	10 48 5.35	11 44 8.9	128.50
8	9 18 58.29	20 41 20.6	97.82	8	10 49 54.65	11 31 17.9	128.97
9	9 20 57.35	20 31 33.7	98.67	9	10 51 43.82	11 18 24.1	129.43
10	9 22 56.15	20 21 41.7	99.50	10	10 53 32.86	11 5 27.5	129.90
11	9 24 54.68	20 11 44.7	100.32	11	10 55 21.78	10 52 28.1	130.33
12	9 26 52.96	20 1 42.8	101.13	12	10 57 10.57	10 39 26.1	130.77
13	9 28 50.98	19 51 36.0	101.93	13	10 58 59.25	10 26 21.5	131.22
14	9 30 48.74	19 41 24.4	102.75	14	11 0 47.82	10 13 14.2	131.63
15	9 32 46.25	19 31 7.9	103.52	15	11 2 36.29	10 0 4.4	132.05
16	9 34 43.51	19 20 46.8	104.32	16	11 4 24.65	9 46 52.1	132.47
17	9 36 40.51	19 10 20.9	105.08	17	11 6 12.90	9 33 37.3	132.88
18	9 38 37.27	18 59 50.4	105.85	18	11 8 1.06	9 20 20.0	133.27
19	9 40 33.77	18 49 15.3	106.60	19	11 9 49.13	9 7 0.4	133.67
20	9 42 30.03	18 38 35.7	107.35	20	11 11 37.12	8 53 38.4	134.05
21	9 44 26.05	18 27 51.6	108.08	21	11 13 25.01	8 40 14.1	134.43
22	9 46 21.83	18 17 3.1	108.82	22	11 15 12.83	8 26 47.5	134.80
23	9 48 17.37	N. 18 6 10.2	109.55	23	11 17 0.58	N. 8 13 18.7	135.17
THURSDAY 6.				SATURDAY 8.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	9 50 12.67	N. 17 55 12.9	110.27	0	11 18 48.24	N. 7 59 47.7	135.53
1	9 52 7.74	17 44 11.3	110.95	1	11 20 35.84	7 46 14.5	135.87
2	9 54 2.58	17 33 5.6	111.67	2	11 22 23.38	7 32 39.3	136.22
3	9 55 57.19	17 21 55.6	112.35	3	11 24 10.86	7 19 2.0	136.57
4	9 57 51.57	17 10 41.5	113.05	4	11 25 58.29	7 5 22.6	136.88
5	9 59 45.73	16 59 23.2	113.70	5	11 27 45.66	6 51 41.3	137.22
6	10 1 39.67	16 48 1.0	114.38	6	11 29 32.99	6 37 58.0	137.53
7	10 3 33.39	16 36 34.7	115.02	7	11 31 20.28	6 24 12.8	137.85
8	10 5 26.90	16 25 4.6	115.68	8	11 33 7.53	6 10 25.7	138.13
9	10 7 20.20	16 13 30.5	116.33	9	11 34 54.75	5 56 36.9	138.45
10	10 9 13.29	16 1 52.5	116.95	10	11 36 41.95	5 42 46.2	138.73
11	10 11 6.18	15 50 10.8	117.58	11	11 38 29.11	5 28 53.8	139.02
12	10 12 58.85	15 38 25.3	118.20	12	11 40 16.26	5 14 59.7	139.28
13	10 14 51.33	15 26 36.1	118.80	13	11 42 3.40	5 1 4.0	139.57
14	10 16 43.61	15 14 43.3	119.42	14	11 43 50.52	4 47 6.6	139.83
15	10 18 35.69	15 2 46.8	120.00	15	11 45 37.65	4 33 7.6	140.08
16	10 20 27.59	14 50 46.8	120.60	16	11 47 24.77	4 19 7.1	140.32
17	10 22 19.29	14 38 48.2	121.17	17	11 49 11.89	4 5 5.2	140.58
18	10 24 10.81	14 26 36.2	121.72	18	11 50 59.02	3 51 1.7	140.80
19	10 26 2.16	14 14 22.2	122.27	19	11 52 46.17	3 36 56.9	141.05
20	10 27 53.32	14 2 7.2	122.80	20	11 54 33.33	3 22 50.6	141.27
21	10 29 44.31	13 50 1.2	123.32	21	11 56 20.52	3 8 43.0	141.47
22	10 31 35.12	13 37 4.2	123.82	22	11 58 7.73	2 54 34.2	141.68
23	10 33 25.77	13 24 16.2	124.30	23	11 59 54.98	2 40 24.1	141.90
24	10 35 16.26	N. 12 11 12.7	124.75	24	12 1 42.26	N. 2 26 12.7	125.02

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.
SUNDAY 9.				TUESDAY 11.		
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]
0	12 1 42.26	N. 2 26 12.7	142.08	0	13 29 52.42	S. 9 4 3.6
1	12 3 29.58	2 12 0.2	142.28	1	13 31 47.70	9 18 17.8
2	12 5 16.95	1 57 46.5	142.45	2	13 33 43.27	9 32 30.7
3	12 7 4.36	1 43 31.8	142.63	3	13 35 39.15	9 46 42.4
4	12 8 51.84	1 29 16.0	142.78	4	13 37 35.33	10 0 52.5
5	12 10 39.37	1 14 59.3	142.97	5	13 39 31.83	10 15 1.2
6	12 12 26.97	1 0 41.5	143.10	6	13 41 28.65	10 29 8.4
7	12 14 14.64	0 46 22.9	143.27	7	13 43 25.79	10 43 14.0
8	12 16 2.38	0 32 3.3	143.38	8	13 45 23.26	10 57 17.9
9	12 17 50.20	0 17 43.0	143.53	9	13 47 21.07	11 11 20.0
10	12 19 38.11	N. 0 3 21.8	143.65	10	13 49 19.22	11 25 20.3
11	12 21 26.11	S. 0 11 0.1	143.77	11	13 51 17.72	11 39 18.7
12	12 23 14.20	0 25 22.7	143.88	12	13 53 16.57	11 53 15.2
13	12 25 2.40	0 39 46.0	143.97	13	13 55 15.77	12 7 9.6
14	12 26 50.69	0 54 9.8	144.07	14	13 57 15.34	12 21 1.9
15	12 28 39.10	1 8 34.2	144.17	15	13 59 15.27	12 34 52.0
16	12 30 27.63	1 22 59.2	144.23	16	14 1 15.58	12 48 39.9
17	12 32 16.27	1 37 24.6	144.32	17	14 3 16.27	13 2 25.4
18	12 34 5.04	1 51 50.5	144.38	18	14 5 17.34	13 16 8.5
19	12 35 53.94	2 6 16.8	144.43	19	14 7 18.81	13 29 49.1
20	12 37 42.98	2 20 43.4	144.48	20	14 9 20.67	13 43 27.1
21	12 39 32.16	2 35 10.3	144.52	21	14 11 22.93	13 57 2.5
22	12 41 21.48	2 49 37.4	144.55	22	14 13 25.59	14 10 35.1
23	12 43 10.95	S. 3 4 4.7	144.58	23	14 15 28.67	S. 14 24 4.9
MONDAY 10.				WEDNESDAY 12.		
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]
0	12 45 0.58	S. 3 18 32.2	144.60	0	14 17 32.16	S. 14 37 31.9
1	12 46 50.37	3 32 59.8	144.60	1	14 19 36.08	14 50 55.8
2	12 48 40.33	3 47 27.4	144.62	2	14 21 40.42	15 4 16.7
3	12 50 30.46	4 1 55.1	144.60	3	14 23 45.20	15 17 34.4
4	12 52 20.76	4 16 22.7	144.58	4	14 25 50.41	15 30 48.9
5	12 54 11.25	4 30 50.2	144.57	5	14 27 56.07	15 44 0.1
6	12 56 1.93	4 45 17.6	144.52	6	14 30 2.18	15 57 7.8
7	12 57 52.80	4 59 44.7	144.48	7	14 32 8.73	16 10 12.0
8	12 59 43.87	5 14 11.6	144.43	8	14 34 15.75	16 23 12.7
9	13 1 35.15	5 28 38.2	144.38	9	14 36 23.22	16 36 9.6
10	13 3 26.63	5 43 4.5	144.30	10	14 38 31.17	16 49 2.7
11	13 5 18.33	5 57 30.3	144.23	11	14 40 39.58	17 1 52.0
12	13 7 10.25	6 11 55.7	144.13	12	14 42 48.47	17 14 37.3
13	13 9 2.39	6 26 20.5	144.05	13	14 44 57.84	17 27 18.6
14	13 10 54.77	6 40 44.8	143.93	14	14 47 7.69	17 39 55.6
15	13 12 47.38	6 55 8.4	143.83	15	14 49 18.04	17 52 28.5
16	13 14 40.23	7 9 31.4	143.70	16	14 51 28.88	18 4 56.9
17	13 16 33.33	7 23 53.6	143.57	17	14 53 40.22	18 17 20.3
18	13 18 26.68	7 38 15.0	143.43	18	14 55 52.06	18 29 40.3
19	13 20 20.29	7 52 35.6	143.28	19	14 58 4.40	18 41 5.7
20	13 22 14.17	8 6 55.3	143.10	20	15 0 17.25	18 53 5.7
21	13 24 8.31	8 21 13.9	142.95	21	15 2 30.62	19 5 5.7
22	13 26 2.73	8 35 31.6	142.77	22	15 4 44.51	19 17 5.7
23	13 27 57.43	8 49 48.2	142.57	23	15 6 58.91	19 29 5.7
24	13 29 52.42	S. 9 4 3.6	142.35	24	15 9 13.84	19 41 5.7

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

r.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 13.				SATURDAY 15.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	15 9 13.84	S. 19 41 54.8	117.40	0	17 7 51.88	S. 26 49 25.5	51.67
1	15 11 29.30	19 53 39.2	116.50	1	17 10 32.90	26 54 35.5	49.80
2	15 13 45.29	20 5 18.2	115.58	2	17 13 14.36	26 59 34.3	47.93
3	15 16 1.81	20 16 51.7	114.63	3	17 15 56.24	27 4 21.9	46.07
4	15 18 18.87	20 28 19.5	113.67	4	17 18 38.55	27 8 58.3	44.15
5	15 20 36.47	20 39 41.5	112.68	5	17 21 21.26	27 13 23.2	42.25
6	15 22 54.62	20 50 57.6	111.70	6	17 24 4.38	27 17 36.7	40.30
7	15 25 13.30	21 2 7.8	110.68	7	17 26 47.88	27 21 38.5	38.37
8	15 27 32.54	21 13 11.9	109.63	8	17 29 31.77	27 25 28.7	36.40
9	15 29 52.32	21 24 9.7	108.58	9	17 32 16.03	27 29 7.1	34.42
10	15 32 12.65	21 35 1.2	107.50	10	17 35 0.65	27 32 33.6	32.43
11	15 34 33.54	21 45 46.2	106.42	11	17 37 45.61	27 35 48.2	30.43
12	15 36 54.98	21 56 24.7	105.30	12	17 40 30.92	27 38 50.8	28.40
13	15 39 16.98	22 6 56.5	104.17	13	17 43 16.56	27 41 41.2	26.38
14	15 41 39.53	22 17 21.5	103.02	14	17 46 2.52	27 44 19.5	24.32
15	15 44 2.64	22 27 39.6	101.83	15	17 48 48.78	27 46 45.4	22.28
16	15 46 26.32	22 37 50.6	100.63	16	17 51 35.33	27 48 59.1	20.20
17	15 48 50.55	22 47 54.4	99.43	17	17 54 22.16	27 51 0.3	18.13
18	15 51 15.34	22 57 51.0	98.18	18	17 57 9.26	27 52 49.1	16.03
19	15 53 40.69	23 7 40.1	96.93	19	17 59 56.61	27 54 25.3	13.95
20	15 56 6.60	23 17 21.7	95.65	20	18 2 44.21	27 55 49.0	11.83
1	15 58 33.08	23 26 55.6	94.35	21	18 5 32.04	27 57 0.0	9.72
2	16 1 0.11	23 36 21.7	93.03	22	18 8 20.08	27 57 58.3	7.60
3	16 3 27.70	S. 23 45 39.9	91.70	23	18 11 8.33	S. 27 58 43.9	5.47
FRIDAY 14.				SUNDAY 16.			
0	16 5 55.85	S. 23 54 50.1	90.33	0	18 13 56.77	S. 27 59 16.7	3.32
1	16 8 24.56	24 3 52.1	88.97	1	18 16 45.39	27 59 36.6	1.18
2	16 10 53.82	24 12 45.9	87.55	2	18 19 34.17	27 59 43.7	0.97
3	16 13 23.64	24 21 31.2	86.13	3	18 22 23.10	27 59 37.9	3.13
4	16 15 54.01	24 30 8.0	84.68	4	18 25 12.16	27 59 19.1	5.30
5	16 18 24.93	24 38 36.1	83.22	5	18 28 1.34	27 58 47.3	7.47
6	16 20 56.39	24 46 55.5	81.73	6	18 30 50.63	27 58 2.5	9.62
7	16 23 28.40	24 55 5.9	80.23	7	18 33 40.02	27 57 4.8	11.82
8	16 26 0.95	25 3 7.3	78.72	8	18 36 29.48	27 55 53.9	13.97
9	16 28 34.04	25 10 59.6	77.17	9	18 39 19.01	27 54 30.1	16.17
10	16 31 7.67	25 18 42.6	75.62	10	18 42 8.59	27 52 53.1	18.33
11	16 33 41.82	25 26 16.3	74.02	11	18 44 58.21	27 51 3.1	20.50
12	16 36 16.50	25 33 40.4	72.42	12	18 47 47.85	27 49 0.1	22.70
13	16 38 51.71	25 40 54.9	70.80	13	18 50 37.50	27 46 43.9	24.87
14	16 41 27.43	25 47 59.7	69.15	14	18 53 27.14	27 44 14.7	27.05
15	16 44 3.67	25 54 54.6	67.48	15	18 56 16.76	27 41 32.4	29.23
16	16 46 40.42	26 1 39.5	65.80	16	18 59 6.34	27 38 37.0	31.40
17	16 49 17.66	26 8 14.3	64.10	17	19 1 55.88	27 35 28.6	33.57
18	16 51 55.40	26 14 38.9	62.37	18	19 4 45.35	27 32 7.2	35.73
19	16 54 33.64	26 20 53.1	60.63	19	19 7 34.75	27 28 32.8	37.88
20	16 57 12.35	26 26 56.9	58.88	20	19 10 24.06	27 24 45.5	40.05
21	16 59 51.54	26 32 50.2	57.10	21	19 13 13.27	27 20 45.2	42.18
22	17 2 31.19	26 38 32.8	55.30	22	19 16 2.36	27 16 32.1	44.35
23	17 5 11.31	26 44 4.6	53.48	23	19 18 51.32	27 12 6.0	46.47
24	17 8 25.5	26 49 25.5		24	19 21 40.13	S. 27 7 27.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
MONDAY 17.				WEDNESDAY 19.			
0	19 21 40.13	S. 27 7 27.2	48.60	0	21 30 33.52	S. 19 39 50.6	131
1	19 24 28.79	27 2 35.6	50.73	1	21 33 4.15	19 26 36.0	131
2	19 27 17.28	26 57 31.2	52.83	2	21 35 34.29	19 13 14.1	131
3	19 30 5.59	26 52 14.2	54.93	3	21 38 3.96	18 59 44.8	131
4	19 32 53.71	26 46 44.6	57.03	4	21 40 33.14	18 46 8.5	131
5	19 35 41.62	26 41 2.4	59.10	5	21 43 1.85	18 32 25.2	131
6	19 38 29.31	26 35 7.8	61.18	6	21 45 30.07	18 18 35.1	131
7	19 41 16.77	26 29 0.7	63.23	7	21 47 57.82	18 4 38.2	141
8	19 44 3.99	26 22 41.3	65.28	8	21 50 25.09	17 50 34.9	141
9	19 46 50.96	26 16 9.6	67.30	9	21 52 51.89	17 36 25.1	141
10	19 49 37.66	26 9 25.8	69.33	10	21 55 18.21	17 22 9.0	141
11	19 52 24.09	26 2 29.8	71.35	11	21 57 44.06	17 7 46.9	141
12	19 55 10.23	25 55 21.7	73.33	12	22 0 9.45	16 53 18.7	141
13	19 57 56.07	25 48 1.7	75.32	13	22 2 34.37	16 38 44.7	141
14	20 0 41.61	25 40 29.8	77.27	14	22 4 58.82	16 24 5.1	141
15	20 3 26.83	25 32 46.2	79.22	15	22 7 22.81	16 9 19.8	141
16	20 6 11.72	25 24 50.9	81.15	16	22 9 46.34	15 54 29.2	141
17	20 8 56.28	25 16 44.0	83.07	17	22 12 9.42	15 39 33.2	141
18	20 11 40.49	25 8 25.6	84.97	18	22 14 32.04	15 24 32.1	151
19	20 14 24.35	24 59 55.8	86.83	19	22 16 54.21	15 9 26.0	151
20	20 17 7.84	24 51 14.8	88.72	20	22 19 15.93	14 54 15.1	151
21	20 19 50.97	24 42 22.5	90.55	21	22 21 37.21	14 38 59.4	151
22	20 22 33.71	24 33 19.2	92.37	22	22 23 58.04	14 23 39.0	151
23	20 25 16.08	S. 24 24 5.0	94.18	23	22 26 18.44	S. 14 8 14.2	151
TUESDAY 18.				THURSDAY 20.			
0	20 27 58.05	S. 24 14 39.9	95.97	0	22 28 38.41	S. 13 52 45.1	151
1	20 30 39.61	24 5 4.1	97.75	1	22 30 57.94	13 37 11.8	151
2	20 33 20.77	23 55 17.6	99.48	2	22 33 17.05	13 21 34.3	151
3	20 36 1.51	23 45 20.7	101.22	3	22 35 35.74	13 5 53.0	151
4	20 38 41.84	23 35 13.4	102.92	4	22 37 54.00	12 50 7.8	151
5	20 41 21.74	23 24 55.9	104.62	5	22 40 11.86	12 34 19.0	151
6	20 44 1.21	23 14 28.2	106.27	6	22 42 29.31	12 18 26.6	151
7	20 46 40.24	23 3 50.6	107.92	7	22 44 46.35	12 2 30.8	151
8	20 49 18.83	22 53 3.1	109.55	8	22 47 2.99	11 46 31.7	161
9	20 51 56.98	22 42 5.8	111.13	9	22 49 19.24	11 30 29.4	161
10	20 54 34.68	22 30 59.0	112.72	10	22 51 35.10	11 14 24.1	161
11	20 57 11.92	22 19 42.7	114.28	11	22 53 50.58	10 58 15.8	161
12	20 59 48.71	22 8 17.0	115.80	12	22 56 5.68	10 42 4.8	161
13	21 2 25.04	21 56 42.2	117.33	13	22 58 20.41	10 25 51.1	161
14	21 5 0.90	21 44 58.2	118.80	14	23 0 34.77	10 9 34.9	161
15	21 7 36.29	21 33 5.4	120.27	15	23 2 48.76	9 53 16.2	161
16	21 10 11.22	21 21 3.8	121.72	16	23 5 2.40	9 36 55.2	161
17	21 12 45.68	21 8 53.5	123.13	17	23 7 15.68	9 20 32.0	161
18	21 15 19.66	20 56 34.7	124.53	18	23 9 28.62	9 4 6.7	161
19	21 17 53.17	20 44 7.5	125.92	19	23 11 41.21	8 47 20.2	161
20	21 20 26.20	20 31 32.0	127.25	20	23 13 53.46	8	161
21	21 22 58.75	20 18 48.5	128.58	21	23 16 5.38	8	161
22	21 25 30.82	20 5 57.0	129.90	22	23 18 16.98	7	161
23	21 28 2.41	19 52 57.6	131.17	23	23 20 28.25	7	161
24	21 30 33.52	S. 19 39 50.6		24	23 22 39.20	S. 7	161

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 21.				SUNDAY 23.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	23 22 39.20	S. 7 24 57.8	166.12	0	1 3 3.88	N. 5 46 54.3	158.18
1	23 24 49.84	7 8 21.1	166.30	1	1 5 6.24	6 2 43.4	157.68
2	23 27 0.18	6 51 43.3	166.48	2	1 7 8.56	6 18 29.5	157.18
3	23 29 10.21	6 35 4.4	166.65	3	1 9 10.85	6 34 12.6	156.68
4	23 31 19.95	6 18 24.5	166.80	4	1 11 13.11	6 49 52.7	156.17
5	23 33 29.41	6 1 43.7	166.93	5	1 13 15.34	7 5 29.7	155.62
6	23 35 38.58	5 45 2.1	167.03	6	1 15 17.55	7 21 3.4	155.08
7	23 37 47.47	5 28 19.9	167.12	7	1 17 19.75	7 36 33.9	154.52
8	23 39 56.09	5 11 37.2	167.22	8	1 19 21.94	7 52 1.0	153.97
9	23 42 4.45	4 54 53.9	167.27	9	1 21 24.12	8 7 24.8	153.38
10	23 44 12.54	4 38 10.3	167.30	10	1 23 26.30	8 22 45.1	152.80
11	23 46 20.38	4 21 26.5	167.33	11	1 25 28.49	8 38 1.9	152.20
12	23 48 27.98	4 4 42.5	167.35	12	1 27 30.68	8 53 15.1	151.60
13	23 50 35.33	3 47 58.4	167.33	13	1 29 32.89	9 8 24.7	150.97
14	23 52 42.45	3 31 14.4	167.32	14	1 31 35.12	9 23 30.5	150.35
15	23 54 49.34	3 14 30.5	167.28	15	1 33 37.37	9 38 32.6	149.72
16	23 56 56.00	2 57 46.8	167.23	16	1 35 39.64	9 53 30.9	149.07
17	23 59 2.44	2 41 3.4	167.17	17	1 37 41.95	10 8 25.3	148.40
18	0 1 8.66	2 24 20.4	167.08	18	1 39 44.29	10 23 15.7	147.73
19	0 3 14.68	2 7 37.9	166.97	19	1 41 46.67	10 38 2.1	147.07
20	0 5 20.50	1 50 56.1	166.87	20	1 43 49.10	10 52 44.5	146.37
21	0 7 26.12	1 34 14.9	166.73	21	1 45 51.57	11 7 22.7	145.67
22	0 9 31.54	1 17 34.5	166.60	22	1 47 54.10	11 21 56.7	144.97
23	0 11 36.79	S. 1 0 54.9	166.43	23	1 49 56.68	N. 11 36 26.5	144.25
SATURDAY 22.				MONDAY 24.			
0	0 13 41.85	S. 0 44 16.3	166.25	0	1 51 59.33	N. 11 50 52.0	143.52
1	0 15 46.73	0 27 38.8	166.08	1	1 54 2.04	12 5 13.1	142.78
2	0 17 51.45	S. 0 11 2.3	165.87	2	1 56 4.81	12 19 29.8	142.05
3	0 19 56.01	N. 0 5 32.9	165.65	3	1 58 7.66	12 33 42.1	141.28
4	0 22 0.40	0 22 6.8	165.43	4	2 0 10.59	12 47 49.8	140.52
5	0 24 4.65	0 38 39.4	165.18	5	2 2 13.59	13 1 52.9	139.75
6	0 26 8.75	0 55 10.5	164.93	6	2 4 16.68	13 15 51.4	138.95
7	0 28 12.71	1 11 40.1	164.67	7	2 6 19.86	13 29 45.1	138.18
8	0 30 16.53	1 28 8.1	164.38	8	2 8 23.12	13 43 34.2	137.37
9	0 32 20.23	1 44 34.4	164.08	9	2 10 26.49	13 57 18.4	136.55
10	0 34 23.80	2 0 58.9	163.78	10	2 12 29.95	14 10 57.7	135.75
11	0 36 27.25	2 17 21.6	163.45	11	2 14 33.51	14 24 32.2	134.90
12	0 38 30.59	2 33 42.3	163.13	12	2 16 37.17	14 38 1.6	134.07
13	0 40 33.83	2 50 1.1	162.77	13	2 18 40.95	14 51 26.0	133.23
14	0 42 36.96	3 6 17.7	162.43	14	2 20 44.84	15 4 45.4	132.37
15	0 44 40.00	3 22 32.3	162.05	15	2 22 48.84	15 17 59.6	131.50
16	0 46 42.95	3 38 44.6	161.67	16	2 24 52.96	15 31 8.6	130.63
17	0 48 45.81	3 54 54.6	161.27	17	2 26 57.20	15 44 12.4	129.75
18	0 50 48.50	4 11 2.2	160.87	18	2 29 1.57	15 57 10.9	128.87
19	0 52 51.11	4 27 7.4	160.45	19	2 31 6.06	16 10 4.1	127.95
20	0 54 53.66	4 43 1.1	160.02	20	2 33 10.68	16 22 51.8	127.05
21	0 56 56.15	4 58 5.2	159.58	21	2 35 15.44	16 35 34.1	126.13
22	0 58 58.58	5 14 5.1	159.12	22	2 37 20.32	16 48 10.9	125.22
23	0 60 60.95	5 30 5.8	158.65	23	2 39 25.35	17 0 42.2	124.27
24	0 62 63.26	5 46 6.4	158.17	24	2 41 30.52	N. 17 13 7.8	123.30

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 29.				MONDAY 31.		
^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
6 13 18.86	N.28 1 33.7	2.73	0	8 0 5.36	N.25 41 53.6	60.33
6 15 35.20	28 1 50.1	1.33	1	8 2 14.21	25 35 51.6	61.52
6 17 51.49	28 1 58.1	0.07	2	8 4 22.83	25 29 42.5	62.67
6 20 7.73	28 1 57.7	1.47	3	8 6 31.19	25 23 26.5	63.82
6 22 23.91	28 1 48.9	2.87	4	8 8 39.31	25 17 3.6	64.95
6 24 40.02	28 1 31.7	4.27	5	8 10 47.19	25 10 33.9	66.10
6 26 56.06	28 1 6.1	5.67	6	8 12 54.81	25 3 57.3	67.22
6 29 12.02	28 0 32.1	7.07	7	8 15 2.18	24 57 14.0	68.36
6 31 27.91	27 59 49.7	8.45	8	8 17 9.29	24 50 23.9	69.45
6 33 43.71	27 58 59.0	9.83	9	8 19 16.16	24 43 27.2	70.57
6 35 59.42	27 58 0.0	11.23	10	8 21 22.76	24 36 23.8	71.65
6 38 15.03	27 56 52.6	12.60	11	8 23 29.11	24 29 13.9	72.73
6 40 30.55	27 55 37.0	13.98	12	8 25 35.19	24 21 57.5	73.82
6 42 45.97	27 54 13.1	15.37	13	8 27 41.02	24 14 34.6	74.88
6 45 1.27	27 52 40.9	16.73	14	8 29 46.59	24 7 5.3	75.95
6 47 16.46	27 51 0.5	18.10	15	8 31 51.89	23 59 29.6	77.00
6 49 31.54	27 49 11.9	19.48	16	8 33 56.94	23 51 47.6	78.03
6 51 46.49	27 47 15.0	20.83	17	8 36 1.71	23 43 59.4	79.08
6 54 1.31	27 45 10.0	22.18	18	8 38 6.23	23 36 4.9	80.12
6 56 16.00	27 42 56.9	23.53	19	8 40 10.48	23 28 4.2	81.12
6 58 30.55	27 40 35.7	24.90	20	8 42 14.46	23 19 57.5	82.15
7 0 44.96	27 38 6.3	26.23	21	8 44 18.18	23 11 44.6	83.13
7 2 59.22	27 35 28.9	27.57	22	8 46 21.63	23 3 25.8	84.13
7 5 13.33	N.27 32 43.5	28.92	23	8 48 24.82	N.22 55 1.0	85.12
SUNDAY 30.				TUESDAY, AUG. 1.		
^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
7 7 27.29	N.27 29 50.0	30.23	0	8 50 27.73	N.22 46 30.3	
7 9 41.08	27 26 48.6	31.57				
7 11 54.71	27 23 39.2	32.88				
7 14 8.17	27 20 21.9	34.20				
7 16 21.45	27 16 56.7	35.52				
7 18 34.56	27 13 23.6	36.80				
7 20 47.49	27 9 42.8	38.10				
7 23 0.24	27 5 54.2	39.40				
7 25 12.79	27 1 57.8	40.68				
7 27 25.16	26 57 53.7	41.97				
7 29 37.33	26 53 41.9	43.23				
7 31 49.30	26 49 22.5	44.50				
7 34 1.07	26 44 55.5	45.77				
7 36 12.64	26 40 20.9	47.00				
7 38 23.99	26 35 38.9	48.27				
7 40 35.14	26 30 49.3	49.50				
7 42 46.06	26 25 52.3	50.73				
7 44 56.77	26 20 47.9	51.95				
7 47 7.26	26 15 36.2	53.18				
7 49 17.52	26 10 17.1	54.38				
7 51 27.56	26 4 50.8	55.60				
7 53 37.36	25 59					
7 55 46.93	25					
7 57 56.27	25					
8 0 5.36	N.27					

PHASES OF THE MOON.

- New Moon - - ^d ^h ^m 2 9 30.2
 ☾ First Quarter - 10 13 10.1
 ○ Full Moon - - 17 10 50.8
 ☾ Last Quarter - 24 2 6.6

- ☾ Apogee - - - - - ^d ^h 5 9
 ☾ Perigee - - - - - 18 3

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.		Noon.	P.L. of diff.	III ^b .	P.L. of diff.	VI ^b .	P.L. of diff.	IX ^b .
4	Regulus	E.	27 58 39	3107	26 30 37	3115	25 2 45	3124	23 35 4
	Mars	E.	48 10 34	3277	46 45 56	3281	45 21 22	3284	43 56 52
	Spica π	E.	81 52 13	3061	80 23 16	3065	78 54 23	3068	77 25 34
	Saturn	E.	100 22 4	3060	98 53 5	3062	97 24 9	3065	95 55 17
5	SUN	W.	29 1 13	3506	30 21 31	3503	31 41 52	3499	33 2 17
	Venus	W.	15 58 59	3672	17 16 16	3657	18 33 49	3646	19 51 34
	Mars	E.	36 55 19	3302	35 31 10	3305	34 7 4	3307	32 43 0
	Spica π	E.	70 2 16	3082	68 33 41	3083	67 5 13	3084	65 36 44
	Saturn	E.	88 31 44	3079	87 3 9	3080	85 34 35	3082	84 6 34
6	SUN	W.	39 45 6	3483	41 5 49	3481	42 26 34	3477	43 47 24
	Venus	W.	26 22 32	3603	27 41 3	3598	28 59 39	3594	30 18 20
	Spica π	E.	58 14 32	3086	56 46 5	3086	55 17 38	3084	53 49 9
	Saturn	E.	76 43 35	3083	75 15 5	3083	73 46 35	3082	72 18 32
	Antares	E.	104 7 21	3082	102 38 49	3080	101 10 15	3078	99 41 39
7	SUN	W.	50 32 29	3455	51 53 44	3449	53 15 5	3445	54 36 31
	Venus	W.	36 53 5	3565	38 12 18	3558	39 31 38	3553	40 51 42
	Jupiter	W.	16 34 19	3252	17 59 27	3231	19 25 0	3214	20 50 53
	Spica π	E.	46 26 14	3072	44 57 30	3069	43 28 42	3065	41 59 50
	Saturn	E.	64 54 52	3069	63 26 5	3065	61 57 13	3062	60 28 17
8	Antares	E.	92 18 5	3065	90 49 12	3061	89 20 14	3057	87 51 12
	SUN	W.	61 25 24	3406	62 47 34	3398	64 9 53	3390	65 32 21
	Venus	W.	47 30 1	3511	48 50 13	3503	50 10 34	3495	51 31 42
	Jupiter	W.	28 4 17	3138	29 31 40	3128	30 59 15	3118	32 27 32
	Regulus	W.	20 1 16	3106	21 29 18	3088	22 57 42	3073	24 26 25
9	Spica π	E.	34 34 11	3038	33 4 45	3032	31 35 12	3026	30 5 32
	Saturn	E.	53 2 14	3033	51 32 42	3026	50 3 2	3020	48 33 14
	Antares	E.	80 24 28	3025	78 54 46	3018	77 24 55	3011	75 54 56
	SUN	W.	72 27 19	3332	73 50 54	3321	75 14 41	3309	76 38 42
	Venus	W.	58 16 18	3434	59 37 56	3422	60 59 48	3411	62 21 52
10	Jupiter	W.	39 49 14	3053	41 18 21	3042	42 47 42	3030	44 17 18
	Regulus	W.	31 54 11	2993	33 24 32	2980	34 55 10	2968	36 26 32
	Saturn	E.	41 1 59	2974	39 31 14	2966	38 0 19	2957	36 29 12
	Antares	E.	68 22 27	2959	66 51 23	2950	65 20 7	2939	63 48 37
	SUN	W.	83 42 24	3232	85 7 55	3217	86 33 44	3202	87 59 51
11	Venus	W.	69 15 58	3329	70 39 36	3315	72 3 30	3300	73 27 42
	Jupiter	W.	51 49 7	2953	53 20 19	2939	54 51 49	2924	56 23 37
	Regulus	W.	44 4 43	2887	45 37 18	2873	47 10 11	2859	48 43 23
	Mars	W.	20 13 56	3104	21 42 1	3086	23 10 28	3069	24 39 15
	Saturn	E.	28 50 40	2901	27 18 22	2891	25 45 52	2883	24 13 11
12	Antares	E.	56 7 34	2868	54 34 34	2855	53 1 17	2842	51 27 43
	SUN	W.	95 15 4	3106	96 43 6	3088	98 11 30	3072	99 40 14
	Venus	W.	80 33 28	3199	81 59 38	3182	83 26 9	3163	84 53
	Jupiter	W.	64 7 26	2832	65 41 13	2814	67 15 22	2798	68
13	Regulus	W.	56 34 23	2765	58 9 37	2747	59 45 14	2731	
	Mars	W.	32 8 30	2965	33 39 26	2947	35 10 45	2929	
	Antares	E.	43 35 11	2753	41 59 41	2737	40 23 50		
	α Aquilæ	E.	94 30 7	3588	93 11 19	3568	91 52		

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^b .	P. L. of diff.	XVIII ^b .	P. L. of diff.	XXI ^b .	P. L. of diff.
4	Regulus E.	22 7 35 3146	20 40 21 3160	19 13 24 3176	17 46 46 3196				
	Mars E.	42 32 26 3291	41 8 4 3294	39 43 46 3297	38 19 31 3300				
	Spica π E.	75 56 49 3073	74 28 7 3075	72 59 27 3078	71 30 50 3080				
	Saturn E.	94 26 29 3071	92 57 44 3073	91 29 1 3075	90 0 21 3078				
5	SUN W.	34 22 45 3494	35 43 16 3491	37 3 50 3489	38 24 27 3488				
	Venus W.	21 9 30 3627	22 27 35 3620	23 45 48 3614	25 4 7 3609				
	Mars E.	31 18 58 3311	29 54 59 3312	28 31 1 3314	27 7 6 3316				
	Spica π E.	64 8 17 3086	62 39 50 3087	61 11 24 3087	59 42 58 3087				
6	Saturn E.	82 37 33 3083	81 9 3 3084	79 40 34 3084	78 12 5 3088				
	SUN W.	45 8 16 3471	46 29 13 3467	47 50 14 3463	49 11 19 3459				
	Venus W.	31 37 6 3584	32 55 58 3579	34 14 55 3575	35 33 57 3569				
	Spica π E.	52 20 39 3082	50 52 7 3079	49 23 32 3077	47 54 55 3074				
7	Saturn E.	70 49 30 3079	69 20 55 3077	67 52 17 3074	66 23 36 3072				
	Antares E.	98 13 2 3075	96 44 22 3073	95 15 40 3070	93 46 54 3068				
	SUN W.	55 58 3 3432	57 19 43 3427	58 41 29 3420	60 3 23 3414				
	Venus W.	42 10 36 3540	43 30 16 3534	44 50 3 3526	46 9 58 3519				
8	Jupiter W.	22 17 4 3185	23 43 31 3173	25 10 13 3162	26 37 8 3150				
	Spica π E.	40 30 53 3057	39 1 51 3052	37 32 43 3048	36 3 30 3043				
	Saturn E.	58 59 16 3053	57 30 9 3049	56 0 57 3044	54 31 39 3039				
	Antares E.	86 22 4 3048	84 52 50 3043	83 23 30 3037	81 54 3 3031				
9	SUN W.	66 54 59 3372	68 17 48 3363	69 40 47 3353	71 3 57 3343				
	Venus W.	52 51 45 3475	54 12 37 3466	55 33 39 3456	56 54 53 3446				
	Jupiter W.	33 55 3 3098	35 23 15 3086	36 51 42 3076	38 20 21 3065				
	Regulus W.	25 55 25 3045	27 24 42 3031	28 54 16 3019	30 24 5 3006				
10	Spica π E.	28 35 45 3014	27 5 50 3008	25 35 47 3002	24 5 37 2996				
	Saturn E.	47 3 18 3006	45 33 13 2999	44 2 59 2990	42 32 34 2982				
	Antares E.	74 24 47 2995	72 54 28 2987	71 23 59 2978	69 53 19 2969				
	SUN W.	78 2 56 3285	79 27 25 3272	80 52 9 3259	82 17 8 3245				
11	Venus W.	63 44 11 3385	65 6 45 3371	66 29 34 3358	67 52 38 3344				
	Jupiter W.	45 47 8 3006	47 17 14 2993	48 47 35 2980	50 18 13 2967				
	Regulus W.	37 57 13 2942	39 28 39 2928	41 0 22 2913	42 32 24 2900				
	Saturn E.	34 57 54 2939	33 26 24 2928	31 54 41 2919	30 22 46 2910				
12	Antares E.	62 16 54 2917	60 44 57 2905	59 12 45 2894	57 40 18 2881				
	SUN W.	89 26 15 3172	90 52 58 3156	92 20 0 3139	93 47 22 3123				
	Venus W.	74 52 13 3267	76 17 3 3252	77 42 11 3235	79 7 39 3217				
	Jupiter W.	57 55 44 2894	59 28 10 2880	61 0 55 2864	62 34 0 2848				
1	Regulus W.	50 16 55 2828	51 50 47 2813	53 24 58 2797	54 59 30 2781				
	Mars W.	26 8 24 3034	27 37 54 3018	29 7 44 3001	30 37 56 2983				
	Saturn E.	22 40 19 2867	21 7 18 2862	19 34 10 2858	18 0 57 2856				
	Antares E.	49 53 51 2813	48 19 40 2798	46 45 10 2784	45 10 21 2768				
2	SUN W.	101 9 21 3035	102 38 50 3017	104 8 42 2999	105 38 56 2980				
	Venus W.	86 20 17 3126	87 47 55 3107	89 15 56 3088	90 44 20 3069				
	Jupiter W.	70 24 46 2763	72 0 2 2746	73 35 41 2729	75 11 43 2710				
	Regulus W.	62 57 34 2697	64 34 18 2680	66 11 25 2662	67 48 56 2643				
3	Saturn E.	38 14 30 2893	39 46 58 2875	41 19 49 2856	42 53 4 2837				
	Antares E.	7 11 3 2687	35 34 6 2671	33 56 47 2654	32 19 5 2636				
	Antares E.	7 11 3 2687	35 34 6 2671	33 56 47 2654	32 19 5 2636				
	Antares E.	7 11 3 2687	35 34 6 2671	33 56 47 2654	32 19 5 2636				

MEAN TIME.
LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .
		° ' "		° ' "		° ' "		° ' "
12	Sun W.	107 9 34	2961	108 40 36	2942	110 12 2	2923	111 43 52
	Venus W.	92 13 8	3048	93 42 21	3029	95 11 58	3008	96 42 1
	Jupiter W.	76 48 10	2692	78 25 1	2673	80 2 17	2654	81 39 58
	Regulus W.	69 26 52	2626	71 5 12	2607	72 43 57	2589	74 23 7
	Mars W.	44 26 44	2818	46 0 49	2799	47 35 18	2779	49 10 13
	Spica η W.	15 28 28	2671	17 5 47	2643	18 43 44	2618	20 22 15
	Antares E.	30 40 59	2619	29 2 30	2601	27 23 36	2584	25 44 19
	α Aquilæ E.	83 50 55	3461	82 29 47	3449	81 8 26	3438	79 46 53
13	Sun W.	119 29 19	2805	121 3 40	2785	122 38 27	2766	124 13 39
	Venus W.	104 18 35	2886	105 51 12	2865	107 24 16	2845	108 57 46
	Jupiter W.	89 54 48	2540	91 35 5	2522	93 15 48	2502	94 56 58
	Mars W.	57 11 15	2661	58 48 47	2641	60 26 46	2621	62 5 12
	Spica η W.	28 42 45	2484	30 24 21	2464	32 6 25	2443	33 48 58
	α Aquilæ E.	72 57 2	3404	71 34 50	3404	70 12 38	3407	68 50 29
	Fomalhaut E.	99 47 41	2663	98 10 12	2642	96 32 14	2622	94 53 49
14	Venus W.	116 51 57	2723	118 28 6	2704	120 4 41	2684	121 41 42
	Jupiter W.	103 29 24	2390	105 13 13	2371	106 57 29	2354	108 42 10
	Mars W.	70 24 3	2505	72 5 9	2486	73 46 42	2467	75 28 41
	Spica η W.	42 28 49	2326	44 14 11	2307	46 0 0	2289	47 46 16
	Saturn W.	24 12 18	2362	25 56 48	2339	27 41 51	2316	29 27 27
	α Aquilæ E.	62 1 52	3473	60 40 58	3497	59 20 30	3524	58 0 32
	Fomalhaut E.	86 35 9	2510	84 54 9	2493	83 12 46	2477	81 31 0
15	Mars W.	84 5 0	2362	85 49 30	2346	87 34 23	2331	89 19 38
	Spica η W.	56 44 5	2186	58 32 54	2170	60 22 7	2155	62 11 43
	Saturn W.	38 22 52	2200	40 11 19	2183	42 0 12	2167	43 49 29
	Antares W.	10 51 24	2208	12 39 40	2185	14 28 30	2166	16 17 49
	Fomalhaut E.	72 56 55	2393	71 13 10	2382	69 29 10	2373	67 44 56
	α Pegasi E.	93 59 7	2520	92 18 21	2503	90 37 12	2488	88 55 42
16	Mars W.	98 11 13	2247	99 58 30	2236	101 46 4	2224	103 33 55
	Spica η W.	71 25 4	2074	73 16 43	2063	75 8 39	2052	77 0 53
	Saturn W.	53 1 32	2083	54 52 58	2071	56 44 42	2060	58 36 43
	Antares W.	25 30 36	2075	27 22 13	2063	29 14 9	2052	31 6 22
	Fomalhaut E.	59 1 17	2341	57 16 18	2341	55 31 19	2344	53 46 24
	α Pegasi E.	80 23 40	2420	78 40 34	2414	76 57 19	2408	75 13 56
17	Mars W.	112 36 37	2174	114 25 43	2168	116 14 58	2163	118 4 21
	Saturn W.	68 0 25	2009	69 53 45	2003	71 47 15	1998	73 40 52
	Antares W.	40 31 7	2001	42 24 40	1995	44 18 23	1990	46 12 13
	Fomalhaut E.	45 4 48	2416	43 21 36	2441	41 38 59	2471	39 57 5
	α Pegasi E.	66 36 29	2411	64 53 10	2419	63 10 3	2428	61 27 8
18	Saturn W.	83 10 14	1984	85 4 13	1985	86 58 11	1986	88 52 7
	Antares W.	55 42 40	1977	57 36 51	1976	59 31 3	1977	61 25 13
	Fomalhaut E.	31 43 27	2819	30 9 24	2923	28 37 34	3048	27 8 21
	α Pegasi E.	52 58 10	2544	51 17 58	2577	49 38 31	2613	47 58
	α Arietis E.	92 47 41	2032	90 54 56	2032	89 2 11	20	
19	Saturn W.	98 20 30	2010	100 13 48	2018	102 6		
	Antares W.	70 54 48	2001	72 48 20	2007	74 4		
	α Pegasi E.	40 3 20	2964	38 32 22	3056	37		

MEAN TIME.
LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
12	SUN W.	113 16 8	2883	114 48 48	2864	116 21 53	2845	117 55 23	2825
	Venus W.	98 12 28	2968	99 43 21	2948	101 14 39	2927	102 46 24	2906
	Jupiter W.	83 18 4	2617	84 56 36	2598	86 35 34	2579	88 14 58	2560
	Regulus W.	76 2 43	2551	77 42 45	2533	79 23 12	2514	81 4 6	2495
	Mars W.	50 45 33	2741	52 21 19	2721	53 57 31	2701	55 34 10	2681
	Spica η W.	22 1 19	2570	23 40 55	2548	25 21 2	2526	27 1 39	2505
	Antares E.	24 4 37	2548	22 24 31	2531	20 44 1	2514	19 3 7	2497
	α Aquilæ E.	78 25 10	3422	77 3 18	3415	75 41 18	3409	74 19 12	3406
13	SUN W.	125 49 16	2723	127 25 19	2709	- - -	- - -	- - -	- - -
	Venus W.	110 31 43	2804	112 6 6	2783	113 40 57	2763	115 16 14	2743
	Jupiter W.	96 38 34	2465	98 20 37	2446	100 3 6	2427	101 46 2	2409
	Mars W.	63 44 4	2582	65 23 24	2563	67 3 10	2543	68 43 23	2524
	Spica η W.	35 32 0	2403	37 15 30	2383	38 59 29	2364	40 43 55	2345
	α Aquilæ E.	67 28 24	3417	66 6 27	3426	64 44 40	3439	63 23 7	3455
	Fomalhaut E.	93 14 57	2583	91 35 39	2564	89 55 54	2545	88 15 44	2527
14	Venus W.	123 19 8	2646	124 57 0	2629	- - -	- - -	- - -	- - -
	Jupiter W.	110 27 17	2319	112 12 48	2302	113 58 45	2285	115 45 6	2268
	Mars W.	77 11 7	2431	78 53 58	2413	80 37 14	2396	82 20 55	2379
	Spica η W.	49 32 58	2253	51 20 7	2236	53 7 41	2219	54 55 41	2202
	Saturn W.	31 13 34	2275	33 0 11	2255	34 47 17	2236	36 34 51	2218
	α Aquilæ E.	56 41 10	3594	55 22 29	3636	54 4 34	3687	52 47 33	3745
	Fomalhaut E.	79 48 52	2445	78 6 22	2431	76 23 32	2418	74 40 23	2405
15	Mars W.	91 5 15	2300	92 51 14	2286	94 37 34	2272	96 24 14	2260
	Spica η W.	64 1 41	2126	65 52 1	2112	67 42 42	2099	69 33 43	2086
	Saturn W.	45 39 9	2136	47 29 13	2122	49 19 39	2109	51 10 25	2095
	Antares W.	18 7 35	2132	19 57 46	2116	21 48 21	2101	23 39 18	2088
	Fomalhaut E.	66 0 30	2357	64 15 53	2351	62 31 7	2346	60 46 14	2343
	α Pegasi E.	87 13 51	2460	85 31 42	2448	83 49 16	2438	82 6 35	2428
16	Mars W.	105 22 1	2205	107 10 21	2196	108 58 55	2188	110 47 41	2181
	Spica η W.	78 53 22	2033	80 46 5	2025	82 39 1	2016	84 32 10	2008
	Saturn W.	60 29 0	2040	62 21 32	2032	64 14 17	2023	66 7 15	2015
	Antares W.	32 58 51	2032	34 51 36	2023	36 44 34	2015	38 37 45	2008
	Fomalhaut E.	52 1 36	2356	50 16 58	2366	48 32 34	2379	46 48 29	2396
	α Pegasi E.	73 30 28	2402	71 46 56	2402	70 3 24	2403	68 19 54	2407
17	Mars W.	119 53 50	2156	121 43 24	2153	123 33 2	2151	125 22 43	2149
	Saturn W.	75 34 36	1991	77 28 25	1988	79 22 19	1986	81 16 16	1985
	Antares W.	48 6 10	1982	50 0 12	1979	51 54 19	1977	53 48 29	1977
	Fomalhaut E.	38 15 58	2548	36 35 52	2600	34 56 57	2661	33 19 24	2732
	α Pegasi E.	59 44 31	2455	58 2 15	2472	56 20 23	2493	54 39 0	2517
18	Saturn W.	90 45 59	1992	92 39 46	1996	94 33 27	2000	96 27 2	2004
	Antares W.	63 19 19	1982	65 13 21	1986	67 7 17	1991	69 1 6	1995
	Fomalhaut E.	25 42 12	3387	24 19 41	3618	- - -	- - -	- - -	- - -
	Pegasi E.	46 22 12	2701	44 45 34	2754	43 10 6	2815	41 35 58	2885
	α Pegasi E.	85 16 47	2038	83 24 12	2042	81 31 43	2047	79 39 22	2053
	W.	105 52 34	2041	107 45 4	2051	109 37 19	2061	111 29 18	2072
		78 27 54	2032	80 20 39	2040	82 13 11	2050	84 5 28	2060
		11 416	416	32 49 43	3577	- - -	- - -	- - -	- - -

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
19	α Arietis E.	77 47 10	2059	75 55 8	2067	74 3 18	2075	72 11 40	2084
20	Saturn W.	113 21 1	2083	115 12 26	2094	117 3 34	2107	118 54 23	2111
	Antares W.	85 57 28	2071	87 49 12	2083	89 40 38	2095	91 31 45	2101
	α Arietis E.	62 57 26	2142	61 7 31	2156	59 17 57	2171	57 28 46	2181
	Aldebaran E.	93 21 4	2120	91 30 36	2132	89 40 26	2144	87 50 34	2151
21	α Aquilæ W.	57 0 54	3455	58 22 9	3419	59 44 4	3389	61 6 33	3361
	Fomalhaut W.	24 23 54	3574	25 42 57	3415	27 4 57	3285	28 29 26	3181
	α Arietis E.	48 29 8	2278	46 42 36	2299	44 56 35	2322	43 11 7	2341
	Aldebaran E.	78 46 16	2227	76 58 29	2243	75 11 6	2260	73 24 7	2275
	SUN E.	129 50 58	2499	128 9 43	2514	126 28 49	2528	124 48 15	2541
22	α Aquilæ W.	68 4 48	3290	69 29 11	3284	70 53 41	3281	72 18 15	3271
	Fomalhaut W.	35 56 19	2892	37 28 48	2862	39 1 56	2839	40 35 33	2821
	α Arietis E.	34 33 0	2487	32 51 29	2523	31 10 48	2561	29 31 0	2591
	Aldebaran E.	64 35 25	2364	62 50 59	2382	61 6 59	2402	59 23 27	2421
	SUN E.	116 30 55	2626	114 52 36	2643	113 14 40	2661	111 37 8	2671
23	α Aquilæ W.	79 20 49	3298	80 45 3	3307	82 9 7	3317	83 32 59	3321
	Fomalhaut W.	48 27 51	2783	50 2 41	2783	51 37 31	2785	53 12 19	2771
	α Pegasi W.	32 13 19	3893	33 26 46	3782	34 42 7	3688	35 59 7	3581
	Aldebaran E.	50 52 45	2522	49 12 3	2543	47 31 50	2566	45 52 8	2581
	SUN E.	103 35 23	2768	102 0 13	2785	100 25 26	2804	98 51 3	2821
24	Fomalhaut W.	61 4 50	2818	62 38 54	2827	64 12 47	2835	65 46 29	2841
	α Pegasi W.	42 42 2	3356	44 5 9	3326	45 28 51	3300	46 53 2	3281
	Aldebaran E.	37 41 35	2711	36 5 10	2740	34 29 23	2769	32 54 15	2791
	SUN E.	91 4 50	2909	89 32 42	2926	88 0 56	2943	86 29 32	2951
25	Fomalhaut W.	73 31 46	2897	75 4 9	2908	76 36 18	2920	78 8 12	2931
	α Pegasi W.	53 59 4	3215	55 24 55	3209	56 50 53	3204	58 16 57	3201
	Aldebaran E.	25 9 47	3004	23 39 39	3063	22 10 44	3129	20 43 10	3191
	SUN E.	78 57 38	3040	77 28 15	3055	75 59 10	3071	74 30 25	3081
26	Fomalhaut W.	85 44 15	2986	87 14 45	2998	88 45 0	3010	90 15 1	3021
	α Pegasi W.	65 27 44	3202	66 53 51	3204	68 19 56	3206	69 45 58	3211
	α Arietis W.	21 50 21	3204	23 16 26	3166	24 43 16	3137	26 10 41	3111
	SUN E.	67 11 1	3155	65 43 58	3169	64 17 12	3182	62 50 41	3191
27	α Pegasi W.	76 54 54	3233	78 20 24	3238	79 45 48	3244	81 11 5	3251
	α Arietis W.	33 32 53	3060	35 1 52	3056	36 30 56	3053	38 0 3	3041
	SUN E.	55 41 47	3254	54 16 42	3265	52 51 50	3276	51 27 11	3281
28	α Pegasi W.	88 15 37	3284	89 40 7	3291	91 4 29	3298	92 28 43	3301
	α Arietis W.	45 25 43	3056	46 54 47	3057	48 23 49	3060	49 52 47	3061
	Aldebaran W.	- - -	-	- - -	-	18 59 33	3460	20 20 42	3481
	SUN E.	44 26 57	3338	43 3 30	3347	41 40 13	3358	40 17 8	3361
29	α Arietis W.	57 16 51	3077	58 45 29	3079	60 14 4	3083	61 42 34	3081
	Aldebaran W.	27 19 30	3241	28 44 51	3224	- - -	-	23 36 1	-
	SUN E.	33 24 26	3415	32 2 27	3425	- - -	-	- - -	-
30	α Arietis W.	69 4 17	3099	70 32 28	3101	- - -	-	- - -	-
	Aldebaran W.	38 48 58	3164	40 15 50	3166	- - -	-	- - -	-

MEAN TIME.
LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
19	α Arietis E.	70 20 16 2094		68 29 8 2105		66 38 16 2116		64 47 42 2128	
20	Saturn W.	120 44 52 2133		122 35 0 2147		124 24 48 2162		126 14 13 2177	
	Antares W.	93 22 34 2120		95 13 3 2133		97 3 12 2147		98 53 0 2162	
	α Arietis E.	55 39 59 2203		53 51 36 2221		52 3 39 2239		50 16 9 2258	
	Aldebaran E.	86 1 1 2170		84 11 48 2184		82 22 56 2198		80 34 25 2213	
21	α Aquilæ W.	62 29 31 3343		63 52 53 3325		65 16 36 3311		66 40 35 3299	
	Fomalhaut W.	29 55 58 3097		31 24 11 3028		32 53 49 2973		34 24 36 2928	
	α Arietis E.	41 26 14 2371		39 41 57 2396		37 58 17 2424		36 15 17 2455	
	Aldebaran E.	71 37 33 2292		69 51 22 2309		68 5 36 2328		66 20 17 2346	
	SUN E.	123 8 3 2559		121 28 12 2576		119 48 44 2592		118 9 38 2609	
22	α Aquilæ W.	73 42 51 3280		75 7 26 3282		76 31 59 3286		77 56 27 3291	
	Fomalhaut W.	42 9 33 2808		43 43 51 2797		45 18 23 2790		46 53 4 2785	
	α Arietis E.	27 52 10 2652		26 14 25 2706		24 37 53 2768		23 2 43 2841	
	Aldebaran E.	57 40 22 2440		55 57 45 2460		54 15 36 2481		52 33 56 2502	
	SUN E.	110 0 0 2696		108 23 15 2714		106 46 54 2732		105 10 56 2750	
23	α Aquilæ W.	84 56 39 3339		86 20 5 3353		87 43 15 3367		89 6 9 3382	
	Fomalhaut W.	54 47 3 2792		56 21 41 2797		57 56 13 2804		59 30 36 2811	
	α Pegasi W.	37 17 32 3540		38 37 12 3482		39 57 56 3433		41 19 35 3391	
	Aldebaran E.	44 12 57 2612		42 34 18 2635		40 56 11 2659		39 18 36 2684	
	SUN E.	97 17 3 2839		95 43 26 2856		94 10 11 2874		92 37 19 2892	
24	Fomalhaut W.	67 19 58 2855		68 53 14 2865		70 26 18 2875		71 59 9 2886	
	α Pegasi W.	48 17 39 3260		49 42 37 3246		51 7 52 3233		52 33 22 3223	
	Aldebaran E.	31 19 47 2833		29 46 2 2869		28 13 4 2909		26 40 57 2954	
	SUN E.	84 58 28 2976		83 27 45 2993		81 57 23 3009		80 27 21 3024	
25	Fomalhaut W.	79 39 53 2941		81 11 20 2952		82 42 33 2964		84 13 31 2975	
	α Pegasi W.	59 43 4 3200		61 9 13 3199		62 35 24 3199		64 1 35 3200	
	Aldebaran E.	19 17 12 3306		17 53 7 3424		- - - -		- - - -	
	SUN E.	73 1 57 3100		71 33 47 3115		70 5 55 3129		68 38 20 3142	
26	Fomalhaut W.	91 44 48 3031		93 14 22 3043		94 43 41 3054		96 12 47 3066	
	α Pegasi W.	71 11 55 3214		72 37 48 3218		74 3 36 3223		75 29 18 3228	
	α Arietis W.	27 38 33 3096		29 6 47 3082		30 35 18 3073		32 4 1 3065	
	SUN E.	61 24 26 3206		59 58 24 3219		58 32 38 3231		57 7 6 3242	
27	α Pegasi W.	82 36 14 3257		84 1 16 3263		85 26 11 3270		86 50 58 3277	
	α Arietis W.	39 29 11 3052		40 58 20 3052		42 27 29 3052		43 56 37 3054	
	SUN E.	50 2 44 3298		48 38 30 3307		47 14 27 3318		45 50 36 3328	
28	α Pegasi W.	93 52 48 3313		95 16 44 3321		96 40 31 3329		98 4 9 3337	
	α Arietis W.	51 21 42 3065		52 50 35 3068		54 19 24 3070		55 48 10 3074	
	Aldebaran W.	21 42 59 3352		23 6 10 3316		24 30 3 3285		25 54 32 3260	
	SUN E.	38 54 14 3377		37 31 31 3386		36 8 59 3395		34 46 37 3405	
29	α Arietis W.	63 11 1 3088		64 39 23 3091		66 7 46 3094		67 36 3 3096	
	Aldebaran W.	33 2 40 3189		34 29 2 3182		35 55 33 3175		37 22 12 3169	
	SUN E.	27 57 40 3459		26 36 30 3472		- - - -		- - - -	
	α Arietis W.	74 56 42 3109		76 24 41 3110		77 52 38 3113		79 20 32 3115	
	in W.	44 36 50 3152		46 3 57 3150		47 31 6 3148		48 58 17 3146	

CONFIGURATIONS OF THE SATELLITES OF JUPITER.

At 9^h, MEAN TIME.

Day of the Month.	West.	East.
1	2. 1. O	3. 4.
2	3. O	1.
3	3. 4. 1. O	2.
4	4. 3. O	1.
5	4. 2. O	1. 3.
6	4. 1. O	2. 3.
7	4. O	1. 2. 3.
8	4. 2. 1. O	3.
9	4. 3. 2. O	1.
10	3. 1. 4. O	2.
11	2. O	3. 4. O
12	2. 3. 1. O	4. O
13	1. O	2. 3. 4. O
14	2. O	1. 2. 3. 4.
15	2. 1. O	3. 4.
16	2. 3. O	1. 4.
17	3. 1. O	2. 4.
18	3. O	1. 2. 4.
19	2. 3. 1. 4. O	
20	4. O	2. 3.
21	4. O	2. 3.
22	4. 2. 1. O	3.

THE SATELLITES OF JUPITER

are not visible

from the 22nd day of July until the 21st day of September,

JUPITER being too near to the SUN.

This Table represents, at 9^h after *Mean Noon* of each day, the relative positions of images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in inverting telescope. Jupiter is indicated by the white circles (O) in the centre of the page the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a satellite is at its greatest elongation, the point is placed above or below the centre of the numeral circle (O) at the left or right hand of the page, denotes that the Satellite placed by *on* the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or *in front* of Jupiter.

ECLIPSES OF THE SATELLITES OF JUPITER.

SATELLITE.	Day of the Month.	Mean Time.	Sidereal Time.	PHASE as seen in an inverting Telescope.
I.	1	21 52 23.6	4 33 18.4	Em.
	3	16 21 4.5	23 8 58.0	Em.
	5	10 49 49.8	17 44 42.0	Em.
	7	5 18 30.6	12 20 21.5	Em.
	8	23 47 15.9	6 56 5.5	Em.
	10	18 15 56.0	1 31 44.2	Em.
	12	12 44 40.6	20 7 27.6	Em.
	14	7 13 20.7	14 43 6.4	Em.
	16	1 42 4.4	9 18 48.8	Em.
	17	20 10 44.0	3 54 27.1	Em.
	19	14 39 28.0	22 30 9.7	Em.
	21	9 8 6.8	17 5 47.2	Em.
II.	2	13 36 36.4	20 20 6.3	Em.
	6	2 53 59.2	9 51 29.8	Em.
	9	16 11 18.5	23 22 49.8	Em.
	13	5 28 34.7	12 54 6.6	Em.
	16	18 45 51.1	2 25 23.6	Em.
	20	8 3 2.4	15 56 35.6	Em.
III.	5	15 35 31.9	22 31 11.0	Em.
	12	19 34 26.8	2 58 21.0	Em.
	19	23 33 8.5	7 25 18.0	Em.
IV.	11	0 26 13.4	7 42 52.5	Im.
	11	5 8 43.1	12 26 18.6	Em.

THE ECLIPSES OF THE SATELLITES OF JUPITER

are not visible

from the 22nd day of July until the 21st day of September,

JUPITER being too near to the SUN.

APPROXIMATE SIDEREAL TIMES
OF THE
OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER,
AND OF THE
TRANSITS OF THE SATELLITES AND THEIR SHADOWS
OVER THE DISC OF THE PLANET.

Satellite.	OCCULTATIONS.		TRANSITS OF SATELLITES.		TRANSITS OF SHADOWS.	
	Immersion.	Emersion.	Ingress.	Egress.	Ingress.	Egress.
I.	d h m	d h m	d h m	d h m	d h m	d h m
	1 1 27		2 22 51	2 1 11	0 5 2	1 7 2
	3 20 4		4 17 28	4 19 48	2 23 38	2 1 38
	5 14 41		6 12 5	6 14 26	4 18 14	4 20 38
	7 9 19		7 6 42	8 9 3	6 12 49	6 13 1
	8 3 56	In	9 1 19	9 3 40	8 7 25	8 9 4
	10 22 33	the	11 19 56	11 22 17	9 2 0	9 4 2
	12 17 10		13 14 33	13 16 54	11 20 36	11 22 5
	14 11 48		15 9 11	15 11 31	13 15 11	13 17 1
	15 6 25	Shadow.	16 3 48	16 6 8	15 9 47	15 12
	17 1 2		18 22 25	18 0 46	16 4 23	16 6
	19 19 40		20 17 2	20 19 23	18 22 58	18 1
	21 14 17		22 11 39	22 14 0	20 17 34	20 19
					22 12 9	22 14
II.	2 15 53		4 10 17	4 13 14	4 11 48	4 14
	5 5 30	In	7 23 56	7 2 53	7 1 21	7 4
	9 19 8	the	11 13 34	11 16 31	11 14 53	11 17
	13 8 45		14 3 14	14 6 10	14 4 26	14 7
	16 22 23	Shadow.	18 16 52	18 19 49	18 17 58	18 20
	20 12 1		21 6 31	22 9 28	21 7 31	22 10
III.	5 15 53		1 1 21	1 5 4	1 4 34	2 8
	12 20 45	In the	8 6 12	9 9 56	9 9 1	9 12
	19 1 38	Shadow.	16 11 5	16 14 49	16 13 29	16 17
IV.	10 1 17	10 6 13	2 12 50	2 17 47	2 20 16	2 1
			19 10 14	19 15 11	19 15 22	19 20

THE SATELLITES OF JUPITER

are not visible

from the 22nd day of July until the 21st day of September,

JUPITER being in the sign of CANCER.

Day of the month.	For correcting the Places of the Fixed Stars.				Mean Time	Mean Equinoctial Time, adding 0 ^h 778395.	From Mean Noon of January 1.	
	At Mean Midnight,				of		Day of the Year.	Fraction of the Year.
	Logarithm of				Transit			
					of the First Point of Aries.			
A	B	C	D		Days.			
1	+0.5035	-1.3024	+9.5410	-0.8811	17 19 49.98	100	181	.496
2	0.5433	1.3011	9.5457	0.8817	17 15 54.06	101	182	.498
3	0.5797	1.2996	9.5503	0.8823	17 11 58.14	102	183	.501
4	+0.6131	-1.2980	+9.5549	-0.8829	17 8 2.23	103	184	.504
5	0.6440	1.2963	9.5595	0.8836	17 4 6.31	104	185	.507
6	0.6727	1.2945	9.5639	0.8844	17 0 10.40	105	186	.509
7	+0.6995	-1.2926	+9.5683	-0.8851	16 56 14.49	106	187	.512
8	0.7247	1.2905	9.5727	0.8858	16 52 18.58	107	188	.515
9	0.7484	1.2883	9.5769	0.8866	16 48 22.67	108	189	.517
10	+0.7708	-1.2860	+9.5811	-0.8874	16 44 26.77	109	190	.520
11	0.7919	1.2835	9.5853	0.8883	16 40 30.86	110	191	.523
12	0.8119	1.2809	9.5894	0.8891	16 36 34.95	111	192	.526
13	+0.8309	-1.2781	+9.5935	-0.8900	16 32 39.04	112	193	.528
14	0.8491	1.2752	9.5975	0.8909	16 28 43.12	113	194	.531
15	0.8664	1.2722	9.6014	0.8918	16 24 47.21	114	195	.534
16	+0.8829	-1.2691	+9.6053	-0.8928	16 20 51.29	115	196	.537
17	0.8987	1.2658	9.6091	0.8938	16 16 55.37	116	197	.539
18	0.9138	1.2623	9.6128	0.8948	16 12 59.46	117	198	.542
19	+0.9283	-1.2587	+9.6165	-0.8958	16 9 3.54	118	199	.545
20	0.9422	1.2549	9.6202	0.8968	16 5 7.63	119	200	.548
21	0.9556	1.2510	9.6238	0.8978	16 1 11.73	120	201	.550
22	+0.9684	-1.2469	+9.6274	-0.8989	15 57 15.82	121	202	.553
23	0.9808	1.2427	9.6309	0.9000	15 53 19.91	122	203	.556
24	0.9927	1.2383	9.6343	0.9011	15 49 24.01	123	204	.559
25	+1.0042	-1.2337	+9.6377	-0.9022	15 45 28.10	124	205	.561
26	1.0153	1.2290	9.6410	0.9033	15 41 32.18	125	206	.564
27	1.0260	1.2241	9.6443	0.9044	15 37 36.27	126	207	.567
28	+1.0363	-1.2190	+9.6475	-0.9055	15 33 40.35	127	208	.569
29	1.0462	1.2137	9.6507	0.9066	15 29 44.44	128	209	.572
30	1.0558	1.2082	9.6539	0.9077	15 25 48.52	129	210	.575
31	1.0651	1.2025	9.6570	0.9089	15 21 52.61	130	211	.578
32	+1.0741	-1.1967	+9.6600	-0.9101	15 17 56.69	131	212	.580

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sideral Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to, or sub. from Apparent Time.
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.		
		h m s	s	° ' "	"	m s	m s
Tues.	1	8 45 32	47	18 2 17	38	1 06 58	5 58 97
Wed.	2	8 49 25	36	17 47 1	38	1 06 49	5 55 34
Thur.	3	8 53 17	64	17 31 27	39	1 06 41	5 51 06
Frid.	4	8 57 9	31	17 15 36	40	1 06 32	5 46 18
Sat.	5	9 1 0	37	16 59 28	41	1 06 24	5 40 71
Sun.	6	9 4 50	82	16 43 4	41	1 06 15	5 34 62
Mon.	7	9 8 40	64	16 26 24	42	1 06 07	5 27 91
Tues.	8	9 12 29	87	16 9 28	42	1 05 99	5 20 61
Wed.	9	9 16 18	51	15 52 16	43	1 05 90	5 12 71
Thur.	10	9 20 6	53	15 34 49	44	1 05 82	5 04 28
Frid.	11	9 23 53	98	15 17 7	44	1 05 74	4 55 11
Sat.	12	9 27 40	84	14 59 11	45	1 05 66	4 45 44
Sun.	13	9 31 27	14	14 41 0	46	1 05 58	4 35 21
Mon.	14	9 35 12	87	14 22 36	46	1 05 50	4 24 41
Tues.	15	9 38 58	06	14 3 57	47	1 05 42	4 13 07
Wed.	16	9 42 42	71	13 45 6	47	1 05 34	4 1 20
Thur.	17	9 46 26	83	13 26 1	48	1 05 26	3 48 81
Frid.	18	9 50 10	46	13 6 43	48	1 05 19	3 35 92
Sat.	19	9 53 53	59	12 47 13	49	1 05 12	3 22 54
Sun.	20	9 57 36	25	12 27 31	49	1 05 05	3 8 68
Mon.	21	10 1 18	45	12 7 37	50	1 04 99	2 54 36
Tues.	22	10 5 0	20	11 47 31	50	1 04 92	2 39 60
Wed.	23	10 8 41	52	11 27 14	51	1 04 85	2 24 40
Thur.	24	10 12 22	44	11 6 45	51	1 04 79	2 08 81
Frid.	25	10 16 2	95	10 46 6	52	1 04 73	1 52 80
Sat.	26	10 19 43	06	10 25 17	52	1 04 67	1 36 39
Sun.	27	10 23 22	80	10 4 18	52	1 04 62	1 19 62
Mon.	28	10 27 2	18	9 43 8	53	1 04 56	1 2 50
Tues.	29	10 30 41	19	9 21 50	53	1 04 51	0 45 00
Wed.	30	10 34 19	86	9 0 22	54	1 04 46	0 27 17
Thur.	31	10 37 58	21	8 38 46	54	1 04 41	0 9 02
Frid.	32	10 41 36	24	N. 8 17 1	54	1 04 36	0 0 46

* Mean Time of the Semidiameter passing may be found by subtracting 0' 18 from the Sideral

AT MEAN NOON. TA

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subd. from	Sideral Time.
		Right Ascension.	Declination.	Semidiam.*	Mean Time.	
		h m s	° ' "	° ' "	m s	h m s
ues.	1	8 45 31.50	N. 18 2 21.1	15 47.0	5 58.99	8 39 32.51
ed.	2	8 49 24.40	17 47 04.8	15 47.2	5 55.33	8 43 29.07
hur.	3	8 53 16.70	17 31 31.1	15 47.3	5 51.08	8 47 25.62
rid.	4	8 57 8.38	17 15 40.3	15 47.5	5 46.20	8 51 22.18
at.	5	9 0 59.46	16 59 32.6	15 47.6	5 40.73	8 55 18.73
un.	6	9 4 49.93	16 43 8.5	15 47.8	5 34.65	8 59 15.28
on.	7	9 8 39.77	16 26 28.2	15 47.9	5 27.94	9 3 11.83
ues.	8	9 12 29.02	16 9 32.0	15 48.1	5 20.64	9 7 8.38
ed.	9	9 16 17.68	15 52 20.3	15 48.2	5 12.74	9 11 4.94
hur.	10	9 20 5.73	15 34 53.3	15 48.4	5 4.23	9 15 1.50
rid.	11	9 23 53.20	15 17 41.4	15 48.6	4 55.14	9 18 58.06
at.	12	9 27 40.09	14 59 14.9	15 48.7	4 45.47	9 22 54.62
un.	13	9 31 26.42	14 41 4.2	15 48.9	4 35.24	9 26 51.18
on.	14	9 35 12.18	14 22 39.5	15 49.1	4 24.44	9 30 47.74
ues.	15	9 38 57.40	14 4 1.1	15 49.3	4 13.10	9 34 44.30
ed.	16	9 42 42.08	13 45 9.3	15 49.5	4 1.23	9 38 40.85
hur.	17	9 46 26.24	13 26 4.5	15 49.7	3 48.84	9 42 37.40
rid.	18	9 50 9.90	13 6 46.8	15 49.9	3 35.95	9 46 33.95
at.	19	9 53 53.07	12 47 16.5	15 50.0	3 22.57	9 50 30.50
un.	20	9 57 35.76	12 27 34.1	15 50.2	3 8.71	9 54 27.05
on.	21	10 1 18.00	12 7 39.6	15 50.4	2 54.39	9 58 23.61
ues.	22	10 4 59.79	11 47 33.6	15 50.6	2 39.63	10 2 20.16
ed.	23	10 8 41.15	11 27 16.2	15 50.8	2 24.43	10 6 16.72
hur.	24	10 12 22.11	11 6 47.6	15 51.0	2 8.83	10 10 13.28
rid.	25	10 16 2.66	10 46 8.4	15 51.2	1 52.82	10 14 9.84
at.	26	10 19 42.81	10 25 18.9	15 51.5	1 36.41	10 18 6.40
un.	27	10 23 22.60	10 4 19.2	15 51.7	1 19.64	10 22 2.96
on.	28	10 27 2.02	9 43 9.8	15 51.9	1 2.51	10 25 59.51
ues.	29	10 30 41.08	9 21 51.0	15 52.1	0 45.01	10 29 56.07
ed.	30	10 34 19.79	9 0 23.1	15 52.3	0 27.17	10 33 52.62
hur.	31	10 37 58.19	8 38 46.6	15 52.6	0 9.02	10 37 49.17
rid.	32	10 41 36.26	N. 8 17 1.7	15 52.8	0 9.46	10 41 45.72

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Week.	Day of the Month.	THE MOON'S							
		Longitude.			Latitude.			Age.	Meridian
		Noon.	Midnight.		Noon.	Midnight.		Noon.	Passage.
		^o ['] ["]	^o ['] ["]	^o ['] ["]	^o ['] ["]	^o ['] ["]	^o ['] ["]	^d	^h ^m
Tues.	1	128 47 45 '8	134 43 36 '1	N.4 52 22 '8	N.4 43 47 '6	29 '6	0 11 '3		
Wed.	2	140 39 10 '2	146 34 38 '2	4 32 8 '2	4 17 30 '8	1 '0	0 56 '5		
Thur.	3	152 30 14 '3	158 26 12 '7	4 0 4 '5	3 39 58 '7	2 '0	1 39 '2		
Frid.	4	164 22 50 '6	170 20 26 '7	3 17 25 '7	2 52 36 '7	3 '0	2 20 '0		
Sat.	5	176 19 23 '0	182 20 3 '9	2 25 45 '7	1 57 7 '0	4 '0	2 59 '9		
Sun.	6	188 22 56 '9	194 28 30 '4	1 26 56 '8	N.0 55 31 '0	5 '0	3 39 '8		
Mon.	7	200 37 16 '7	206 49 48 '4	N.0 23 8 '2	S.0 9 52 '4	6 '0	4 21 '0		
Tues.	8	213 6 40 '2	219 28 25 '6	S.0 43 9 '8	1 16 21 '9	7 '0	5 4 '6		
Wed.	9	225 55 39 '2	232 28 52 '1	1 49 4 '1	2 20 50 '9	8 '0	5 52 '2		
Thur.	10	239 8 32 '7	245 55 4 '6	2 51 13 '6	3 19 43 '6	9 '0	6 44 '8		
Frid.	11	252 48 43 '7	259 49 38 '4	3 45 48 '8	4 8 58 '3	10 '0	7 42 '9		
Sat.	12	266 57 46 '5	274 12 53 '4	4 28 39 '8	4 44 22 '6	11 '0	8 45 '8		
Sun.	13	281 34 30 '9	289 1 57 '3	4 55 38 '5	5 2 3 '5	12 '0	9 51 '2		
Mon.	14	296 34 18 '0	304 10 25 '4	5 3 19 '9	4 59 16 '8	13 '0	10 55 '7		
Tues.	15	311 49 2 '8	319 28 45 '3	4 49 52 '2	4 35 13 '9	14 '0	11 56 '9		
Wed.	16	327 8 7 '2	334 45 42 '8	4 15 38 '9	3 51 33 '1	15 '0	12 53 '6		
Thur.	17	342 20 12 '0	349 50 23 '7	3 23 29 '7	2 52 7 '0	16 '0	13 46 '2		
Frid.	18	357 15 16 '9	4 34 4 '9	2 18 8 '4	1 42 17 '4	17 '0	14 36 '1		
Sat.	19	11 46 13 '7	18 51 23 '0	S.1 5 17 '4	S.0 27 49 '2	18 '0	15 24 '4		
Sun.	20	25 49 24 '9	32 40 20 '2	N.0 9 28 '6	N.0 46 2 '0	19 '0	16 12 '6		
Mon.	21	39 24 21 '3	46 1 47 '1	1 21 20 '9	1 54 59 '5	20 '0	17 1 '6		
Tues.	22	52 33 1 '5	58 58 33 '2	2 26 36 '8	2 55 53 '8	21 '0	17 51 '9		
Wed.	23	65 18 52 '8	71 34 32 '9	3 22 35 '9	3 46 31 '4	22 '0	18 43 '8		
Thur.	24	77 46 6 '3	83 54 5 '0	4 7 30 '6	4 25 25 '4	23 '0	19 36 '5		
Frid.	25	89 59 1 '4	96 1 24 '8	4 40 10 '3	4 51 40 '1	24 '0	20 28 '9		
Sat.	26	102 1 43 '2	108 0 22 '2	4 59 52 '3	5 4 45 '6	25 '0	21 19 '9		
Sun.	27	113 57 45 '7	119 54 16 '2	5 6 18 '9	5 4 32 '6	26 '0	22 8 '7		
Mon.	28	125 50 12 '2	131 45 50 '6	4 59 29 '4	4 51 12 '7	27 '0	22 54 '7		
Tues.	29	137 41 27 '8	143 37 17 '2	4 39 47 '5	4 25 19 '5	28 '0	23 38 '2		
Wed.	30	149 33 32 '1	155 30 24 '1	4 7 57 '6	3 47 49 '8	29 '0	δ		
Thur.	31	161 28 5 '6	167 26 48 '2	3 25 8 '4	3 0 5 '8	0 '3	0 19 '6		
Frid.	32	173 26 44 '2	179 28 6 '7	N.2 32 56 '4	N.2 3 54 '6	1 '3	0 59 '8		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 1.				THURSDAY 3.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	8 50 27.73	N. 22 46 30.3	86.10	0	10 23 50.59	N. 14 19 21.7	122.4
1	8 52 30.38	22 37 53.7	87.07	1	10 25 41.83	14 7 5.7	122.2
2	8 54 32.76	22 29 11.3	88.02	2	10 27 32.88	13 54 46.4	122.7
3	8 56 34.87	22 20 23.2	88.97	3	10 29 23.75	13 42 23.8	124.2
4	8 58 36.72	22 11 29.4	89.92	4	10 31 14.45	13 29 58.0	124.8
5	9 0 38.30	22 2 29.9	90.85	5	10 33 4.97	13 17 29.0	125.2
6	9 2 39.61	21 53 24.8	91.77	6	10 34 55.32	13 4 56.9	125.9
7	9 4 40.66	21 44 14.2	92.68	7	10 36 45.51	12 52 21.6	126.2
8	9 6 41.45	21 34 58.1	93.58	8	10 38 35.53	12 39 43.4	126.3
9	9 8 41.97	21 25 36.6	94.48	9	10 40 25.39	12 27 2.2	127.2
10	9 10 42.23	21 16 9.7	95.37	10	10 42 15.09	12 14 18.0	127.4
11	9 12 42.22	21 6 37.5	96.25	11	10 44 4.64	12 1 30.9	128.2
12	9 14 41.96	20 57 0.0	97.12	12	10 45 54.03	11 48 41.0	128.7
13	9 16 41.44	20 47 17.3	97.98	13	10 47 43.28	11 35 48.3	129.2
14	9 18 40.65	20 37 29.4	98.82	14	10 49 32.39	11 22 52.9	129.7
15	9 20 39.61	20 27 36.5	99.68	15	10 51 21.36	11 9 54.7	130.7
16	9 22 38.30	20 17 38.4	100.50	16	10 53 10.19	10 56 53.9	130.7
17	9 24 36.75	20 7 35.4	101.33	17	10 54 58.88	10 43 50.5	131.1
18	9 26 34.93	19 57 27.4	102.15	18	10 56 47.45	10 30 44.5	131.1
19	9 28 32.86	19 47 14.5	102.95	19	10 58 35.89	10 17 36.0	131.7
20	9 30 30.54	19 36 56.8	103.75	20	11 0 24.20	10 4 25.0	132.7
21	9 32 27.97	19 26 34.3	104.55	21	11 2 12.40	9 51 11.5	132.7
22	9 34 25.15	19 16 7.0	105.33	22	11 4 0.48	9 37 55.7	133.2
23	9 36 22.08	N. 19 5 35.0	106.10	23	11 5 48.45	N. 9 24 37.6	133.7
WEDNESDAY 2.				FRIDAY 4.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	9 38 18.76	N. 18 54 58.4	106.87	0	11 7 36.30	N. 9 11 17.1	133.7
1	9 40 15.20	18 44 17.2	107.62	1	11 9 24.05	8 57 54.4	134.7
2	9 42 11.39	18 33 31.5	108.38	2	11 11 11.71	8 44 29.4	134.7
3	9 44 7.34	18 22 41.2	109.10	3	11 12 59.26	8 31 2.3	134.7
4	9 46 3.06	18 11 46.6	109.83	4	11 14 46.72	8 17 33.1	135.2
5	9 47 58.53	18 0 47.6	110.57	5	11 16 34.10	8 4 1.8	135.2
6	9 49 53.77	17 49 44.2	111.27	6	11 18 21.38	7 50 28.4	135.2
7	9 51 48.78	17 38 36.6	111.98	7	11 20 8.59	7 36 53.1	136.2
8	9 53 43.56	17 27 24.7	112.67	8	11 21 55.72	7 23 15.8	136.2
9	9 55 38.10	17 16 8.7	113.37	9	11 23 42.77	7 9 36.6	136.2
10	9 57 32.42	17 4 48.5	114.03	10	11 25 29.76	6 55 55.6	137.2
11	9 59 26.52	16 53 24.3	114.72	11	11 27 16.68	6 42 12.8	137.2
12	10 1 20.39	16 41 56.0	115.37	12	11 29 3.53	6 28 28.2	137.2
13	10 3 14.05	16 30 23.8	116.02	13	11 30 50.33	6 14 41.9	138.2
14	10 5 7.49	16 18 47.7	116.67	14	11 32 37.07	6 0 53.9	138.2
15	10 7 0.72	16 7 7.7	117.32	15	11 34 23.77	5 47 4.3	138.2
16	10 8 53.74	15 55 23.8	117.93	16	11 36 10.42	5 33 13.1	138.2
17	10 10 46.55	15 43 36.2	118.55	17	11 37 57.03	5 19 20.3	138.2
18	10 12 39.15	15 31 44.9	119.17	18	11 39 43.60	5 5 26.1	138.2
19	10 14 31.55	15 19 49.9	119.77	19	11 41 30.14	4 51 30.4	138.2
20	10 16 23.75	15 7 51.3	120.35	20	11 43 16.65	4 37 33.2	138.2
21	10 18 15.75	14 55 49.2	120.95	21	11 45 3.13	4 23 34.7	138.2
22	10 20 7.56	14 43 43.5	121.53	22	11 46 49.59	4 9 34.9	144.2
23	10 21 59.17	14 31 34.3	122.10	23	11 48 36.04	3 55 33.8	144.2
24	10 23 50.59	N. 14 19 21.7		24	11 50 22.48	N. 3 41 31.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 5.				MONDAY 7.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	11 50 22.48	N. 3 41 31.4	140.60	0	13 16 45.71	S. 7 42 13.0	141.32
1	11 52 8.91	3 27 27.8	140.78	1	13 18 37.17	7 56 20.9	141.13
2	11 53 55.33	3 13 23.1	140.98	2	13 20 28.85	8 10 27.7	140.93
3	11 55 41.76	2 59 17.2	141.15	3	13 22 20.77	8 24 33.3	140.73
4	11 57 28.19	2 45 10.3	141.32	4	13 24 12.91	8 38 37.7	140.52
5	11 59 14.63	2 31 2.4	141.50	5	13 26 5.30	8 52 40.8	140.28
6	12 1 1.08	2 16 53.4	141.63	6	13 27 57.93	9 6 42.5	140.07
7	12 2 47.55	2 2 43.6	141.80	7	13 29 50.81	9 20 42.9	139.82
8	12 4 34.05	1 48 32.8	141.93	8	13 31 43.94	9 34 41.8	139.57
9	12 6 20.57	1 34 21.2	142.07	9	13 33 37.34	9 48 39.2	139.30
0	12 8 7.13	1 20 8.8	142.20	10	13 35 31.00	10 2 35.0	139.03
1	12 9 53.72	1 5 55.6	142.32	11	13 37 24.93	10 16 29.2	138.75
2	12 11 40.36	0 51 41.7	142.43	12	13 39 19.14	10 30 21.7	138.45
3	12 13 27.04	0 37 27.1	142.52	13	13 41 13.63	10 44 12.4	138.17
4	12 15 13.77	0 23 12.0	142.63	14	13 43 8.40	10 58 1.4	137.83
5	12 17 0.56	N. 0 8 56.2	142.72	15	13 45 3.46	11 11 48.4	137.53
6	12 18 47.40	S. 0 5 20.1	142.80	16	13 46 58.82	11 25 33.6	137.18
7	12 20 34.31	0 19 36.9	142.88	17	13 48 54.49	11 39 16.7	136.83
8	12 22 21.29	0 33 54.2	142.95	18	13 50 50.45	11 52 57.7	136.50
9	12 24 8.34	0 48 11.9	143.00	19	13 52 46.73	12 6 36.7	136.12
0	12 25 55.47	1 2 29.9	143.07	20	13 54 43.33	12 20 13.4	135.75
1	12 27 42.67	1 16 48.3	143.10	21	13 56 40.24	12 33 47.9	135.35
2	12 29 29.97	1 31 6.9	143.15	22	13 58 37.49	12 47 20.0	134.95
3	12 31 17.35	S. 1 45 25.8	143.17	23	14 0 35.06	S. 13 0 49.7	134.55
SUNDAY 6.				TUESDAY 8.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	12 33 4.84	S. 1 59 44.8	143.20	0	14 2 32.97	S. 13 14 17.0	134.12
1	12 34 52.42	2 14 4.0	143.22	1	14 4 31.22	13 27 41.7	133.70
2	12 36 40.11	2 28 23.3	143.22	2	14 6 29.82	13 41 3.9	133.23
3	12 38 27.90	2 42 42.6	143.22	3	14 8 28.76	13 54 23.3	132.80
4	12 40 15.81	2 57 1.9	143.22	4	14 10 28.07	14 7 40.1	132.32
5	12 42 3.85	3 11 21.2	143.20	5	14 12 27.74	14 20 54.0	131.83
6	12 43 52.00	3 25 40.4	143.17	6	14 14 27.77	14 34 5.0	131.33
7	12 45 40.28	3 39 59.4	143.13	7	14 16 28.17	14 47 13.0	130.83
8	12 47 28.70	3 54 18.2	143.10	8	14 18 28.96	15 0 18.0	130.32
9	12 49 17.26	4 8 36.8	143.05	9	14 20 30.12	15 13 19.9	129.78
0	12 51 5.96	4 22 55.1	143.00	10	14 22 31.67	15 26 18.6	129.25
1	12 52 54.81	4 37 13.1	142.93	11	14 24 33.62	15 39 14.1	128.68
2	12 54 43.81	4 51 30.7	142.85	12	14 26 35.95	15 52 6.2	128.12
3	12 56 32.98	5 5 47.8	142.78	13	14 28 38.69	16 4 54.9	127.53
4	12 58 22.31	5 20 4.5	142.68	14	14 30 41.84	16 17 40.1	126.93
5	13 0 11.80	5 34 20.6	142.58	15	14 32 45.40	16 30 21.7	126.32
6	13 2 1.48	5 48 36.1	142.48	16	14 34 49.37	16 42 59.6	125.70
7	13 3 51.33	6 2 51.0	142.37	17	14 36 53.76	16 55 33.8	125.07
8	13 5 41.36	6 17 5.2	142.25	18	14 38 58.58	17 8 4.2	124.42
9	13 7 31.59	6 31 18.7	142.10	19	14 41 3.83	17 20 30.7	123.75
0	13 9 22.01	6 45 31.3	141.98	20	14 43 9.51	17 32 53.2	123.07
1	13 11 12.62	6 59 43.2	141.82	21	14 45 15.62	17 45 11.6	122.37
2	13 13 3.44	7 13 54.1	141.65	22	14 47 22.18	17 57 25.8	121.67
3	13 14 54.47	7 28 4.0	141.50	23	14 49 29.18	18 9 35.8	120.95
4	13 16 45.71	S. 7 42 13.0		24	14 51 36.64	S. 18 21 41.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 9.				FRIDAY 11.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	14 51 36.64	S. 18 21 41.5	120.22	0	16 43 19.96	S. 26 5 19.6	63.1
1	14 53 44.55	18 33 42.8	119.45	1	16 45 52.21	26 11 50.1	63.1
2	14 55 52.92	18 45 39.5	118.70	2	16 48 24.95	26 18 11.1	61.1
3	14 58 1.75	18 57 31.7	117.90	3	16 50 58.18	26 24 22.4	60.1
4	15 0 11.04	19 9 19.1	117.12	4	16 53 31.88	26 30 24.1	58.1
5	15 2 20.81	19 21 1.8	116.28	5	16 56 6.07	26 36 15.8	56.1
6	15 4 31.05	19 32 39.5	115.47	6	16 58 40.72	26 41 57.6	53.1
7	15 6 41.77	19 44 12.3	114.63	7	17 1 15.84	26 47 29.4	53.1
8	15 8 52.97	19 55 40.1	113.75	8	17 3 51.42	26 52 50.9	51.1
9	15 11 4.65	20 7 2.6	112.88	9	17 6 27.45	26 58 2.3	48.1
10	15 13 16.82	20 18 19.9	111.98	10	17 9 3.93	27 3 3.3	48.1
11	15 15 29.48	20 29 31.8	111.08	11	17 11 40.86	27 7 53.8	46.1
12	15 17 42.63	20 40 38.3	110.15	12	17 14 18.21	27 12 33.7	44.1
13	15 19 56.28	20 51 39.2	109.20	13	17 16 56.00	27 17 3.0	43.1
14	15 22 10.44	21 2 34.4	108.25	14	17 19 34.21	27 21 21.5	41.1
15	15 24 25.09	21 13 23.9	107.27	15	17 22 12.83	27 25 29.2	39.1
16	15 26 40.26	21 24 7.5	106.28	16	17 24 51.86	27 29 26.0	37.1
17	15 28 55.93	21 34 45.2	105.27	17	17 27 31.28	27 33 11.7	35.1
18	15 31 12.11	21 45 16.8	104.23	18	17 30 11.09	27 36 46.2	33.1
19	15 33 28.80	21 55 42.2	103.20	19	17 32 51.28	27 40 9.6	31.1
20	15 35 46.01	22 6 1.4	102.13	20	17 35 31.85	27 43 21.7	29.1
21	15 38 3.73	22 16 14.2	101.05	21	17 38 12.77	27 46 22.4	27.1
22	15 40 21.97	22 26 20.5	99.97	22	17 40 54.05	27 49 11.7	25.1
23	15 42 40.74	S. 22 36 20.3	98.85	23	17 43 35.68	S. 27 51 49.4	23.1
THURSDAY 10.				SATURDAY 12.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	15 45 0.02	S. 22 46 13.4	97.72	0	17 46 17.64	S. 27 54 15.5	21.1
1	15 47 19.83	22 55 59.7	96.58	1	17 48 59.93	27 56 29.9	19.1
2	15 49 40.16	23 5 39.2	95.40	2	17 51 42.53	27 58 32.5	17.1
3	15 52 1.02	23 15 11.6	94.22	3	17 54 25.43	28 0 23.3	15.1
4	15 54 22.40	23 24 36.9	93.02	4	17 57 8.63	28 2 2.2	13.1
5	15 56 44.31	23 33 55.0	91.80	5	17 59 52.11	28 3 29.2	11.1
6	15 59 6.75	23 43 5.8	90.55	6	18 2 35.86	28 4 44.0	9.1
7	16 1 29.72	23 52 9.1	89.28	7	18 5 19.87	28 5 46.8	7.1
8	16 3 53.21	24 1 4.8	88.03	8	18 8 4.13	28 6 37.5	5.1
9	16 6 17.23	24 9 53.0	86.72	9	18 10 48.63	28 7 15.9	3.1
10	16 8 41.77	24 18 33.3	85.40	10	18 13 33.36	28 7 42.0	1.1
11	16 11 6.84	24 27 5.7	84.08	11	18 16 18.30	28 7 55.9	0.1
12	16 13 32.44	24 35 30.2	82.72	12	18 19 3.44	28 7 57.4	0.1
13	16 15 58.56	24 43 46.5	81.35	13	18 21 48.78	28 7 46.5	0.1
14	16 18 25.21	24 51 54.6	79.97	14	18 24 34.30	28 7 23.1	0.1
15	16 20 52.37	24 59 54.4	78.57	15	18 27 19.99	28 6 47.2	0.1
16	16 23 20.06	25 7 45.8	77.13	16	18 30 5.84	28 5 58.8	0.1
17	16 25 48.26	25 15 28.6	75.68	17	18 32 51.83	28 4 57.9	0.1
18	16 28 16.98	25 23 2.7	74.23	18	18 35 37.95	28 3 44.3	0.1
19	16 30 46.21	25 30 28.1	72.75	19	18 38 24.19	28 2 18.2	0.1
20	16 33 15.95	25 37 44.6	71.25	20	18 41 10.53	28 0 39.4	0.1
21	16 35 46.20	25 44 52.1	69.73	21	18 43 56.96	27 58 47.9	0.1
22	16 38 16.96	25 51 50.5	68.20	22	18 46 43.48	27 56 43.8	0.1
23	16 40 48.21	25 58 39.7	66.65	23	18 49 30.07	27 54 27.0	0.1
24	16 43 19.96	S. 26 5 19.6		24	18 52 16.71	S. 27 51 57.5	0.1

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SUNDAY 13.</i>				<i>TUESDAY 15.</i>			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	18 52 16.71	S. 27 51 57.5	27.03	0	21 2 55.00	S. 21 53 48.3	119.57
1	18 55 3.40	27 49 15.3	29.17	1	21 5 31.14	21 41 50.9	121.12
2	18 57 50.11	27 46 20.3	31.27	2	21 8 6.88	21 29 44.2	122.63
3	19 0 36.84	27 43 12.7	33.40	3	21 10 42.21	21 17 28.4	124.17
4	19 3 23.57	27 39 52.3	35.50	4	21 13 17.14	21 5 3.4	125.63
5	19 6 10.30	27 36 19.3	37.63	5	21 15 51.67	20 52 29.6	127.10
6	19 8 57.01	27 32 33.5	39.73	6	21 18 25.78	20 39 47.0	128.53
7	19 11 43.68	27 28 35.1	41.83	7	21 20 59.48	20 26 55.8	129.95
8	19 14 30.31	27 24 24.1	43.95	8	21 23 32.76	20 13 56.1	131.37
9	19 17 16.89	27 20 0.4	46.05	9	21 26 5.63	20 0 47.9	132.72
10	19 20 3.39	27 15 24.1	48.15	10	21 28 38.09	19 47 31.6	134.08
11	19 22 49.82	27 10 35.2	50.23	11	21 31 10.12	19 34 7.1	135.42
12	19 25 36.15	27 5 33.8	52.33	12	21 33 41.74	19 20 34.6	136.70
13	19 28 22.37	27 0 19.8	54.40	13	21 36 12.94	19 6 54.4	138.00
14	19 31 8.48	26 54 53.4	56.48	14	21 38 43.71	18 53 6.4	139.25
15	19 33 54.46	26 49 14.5	58.55	15	21 41 14.06	18 39 10.9	140.48
16	19 36 40.30	26 43 23.2	60.60	16	21 43 43.99	18 25 8.0	141.70
17	19 39 25.99	26 37 19.6	62.67	17	21 46 13.51	18 10 57.8	142.88
18	19 42 11.51	26 31 3.6	64.70	18	21 48 42.60	17 56 40.5	144.05
19	19 44 56.86	26 24 35.4	66.73	19	21 51 11.27	17 42 16.2	145.20
20	19 47 42.03	26 17 55.0	68.75	20	21 53 39.52	17 27 45.0	146.32
21	19 50 27.00	26 11 2.5	70.77	21	21 56 7.35	17 13 7.1	147.42
22	19 53 11.77	26 3 57.9	72.77	22	21 58 34.76	16 58 22.6	148.50
23	19 55 56.32	S. 25 56 41.3	74.77	23	22 1 1.76	S. 16 43 31.6	149.53
<i>MONDAY 14.</i>				<i>WEDNESDAY 16.</i>			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	19 58 40.65	S. 25 49 12.7	76.75	0	22 3 28.34	S. 16 28 34.4	150.57
1	20 1 24.74	25 41 32.2	78.70	1	22 5 54.50	16 13 31.0	151.58
2	20 4 8.58	25 33 40.0	80.67	2	22 8 20.25	15 58 21.5	152.55
3	20 6 52.17	25 25 36.0	82.60	3	22 10 45.59	15 43 6.2	153.52
4	20 9 35.50	25 17 20.4	84.53	4	22 13 10.53	15 27 45.1	154.45
5	20 12 18.55	25 8 53.2	86.43	5	22 15 35.05	15 12 18.4	155.35
6	20 15 1.33	25 0 14.6	88.35	6	22 17 59.17	14 56 46.3	156.23
7	20 17 43.81	24 51 24.5	90.22	7	22 20 22.89	14 41 8.9	157.10
8	20 20 26.00	24 42 23.2	92.08	8	22 22 46.21	14 25 26.3	157.95
9	20 23 7.88	24 33 10.7	93.95	9	22 25 9.14	14 9 38.6	158.75
10	20 25 49.45	24 23 47.0	95.77	10	22 27 31.67	13 53 46.1	159.55
11	20 28 30.71	24 14 12.4	97.60	11	22 29 53.81	13 37 48.8	160.32
12	20 31 11.64	24 4 26.8	99.40	12	22 32 15.57	13 21 46.9	161.05
13	20 33 52.23	23 54 30.4	101.18	13	22 34 36.94	13 5 40.6	161.78
14	20 36 32.48	23 44 23.3	102.93	14	22 36 57.93	12 49 29.9	162.47
15	20 39 12.39	23 34 5.7	104.70	15	22 39 18.55	12 33 15.1	163.15
16	20 41 51.94	23 23 37.5	106.42	16	22 41 38.79	12 16 56.2	163.82
17	20 44 31.14	23 12 59.0	108.13	17	22 43 58.66	12 0 33.3	164.43
18	20 47 9.97	23 2 10.2	109.83	18	22 46 18.17	11 44 6.7	165.03
19	20 49 48.43	22 51 11.2	111.50	19	22 48 37.31	11 27 36.5	165.63
20	20 52 26.51	22 40 2.2	113.15	20	22 50 56.10	11 11 2.7	166.20
21	20 55 4.22	22 28 43.3	114.78	21	22 53 14.54	10 54 25.5	166.73
22	20 57 41.54	22 17 14.6	116.40	22	22 55 32.63	10 37 45.1	167.25
23	21 0 18.47	22 5 36.2	117.98	23	22 57 50.37	10 21 1.6	167.75
24	21 2 55.00	S. 21 53 48.3		24	23 0 7.77	S. 10 4 15.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.
THURSDAY 17.				SATURDAY 19.		
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]
0	23 0 7.77	S. 10 4 15.1	168.23	0	0 44 59.44	N. 3 39 25.5
1	23 2 24.84	9 47 25.7	168.68	1	0 47 6.31	3 56 13.2
2	23 4 41.57	9 30 33.6	169.10	2	0 49 13.10	4 12 58.4
3	23 6 57.98	9 13 39.0	169.52	3	0 51 19.82	4 29 40.9
4	23 9 14.07	8 56 41.9	169.92	4	0 53 26.45	4 46 20.8
5	23 11 29.83	8 39 42.4	170.27	5	0 55 33.02	5 2 57.8
6	23 13 45.29	8 22 40.8	170.62	6	0 57 39.52	5 19 32.0
7	23 16 0.44	8 5 37.1	170.95	7	0 59 45.96	5 36 3.3
8	23 18 15.28	7 48 31.4	171.25	8	1 1 52.35	5 52 31.5
9	23 20 29.83	7 31 23.9	171.52	9	1 3 58.68	6 8 56.6
10	23 22 44.08	7 14 14.8	171.78	10	1 6 4.97	6 25 18.5
11	23 24 58.04	6 57 4.1	172.03	11	1 8 11.22	6 41 37.1
12	23 27 11.72	6 39 51.9	172.23	12	1 10 17.44	6 57 52.3
13	23 29 25.12	6 22 38.5	172.45	13	1 12 23.63	7 14 4.1
14	23 31 38.25	6 5 23.8	172.62	14	1 14 29.79	7 30 12.4
15	23 33 51.10	5 48 8.1	172.78	15	1 16 35.92	7 46 17.1
16	23 36 3.70	5 30 51.4	172.92	16	1 18 42.05	8 2 18.1
17	23 38 16.04	5 13 33.9	173.03	17	1 20 48.15	8 18 15.4
18	23 40 28.12	4 56 15.7	173.15	18	1 22 54.25	8 34 8.9
19	23 42 39.96	4 38 56.8	173.22	19	1 25 0.35	8 49 58.5
20	23 44 51.55	4 21 37.5	173.28	20	1 27 6.44	9 5 44.1
21	23 47 2.91	4 4 17.8	173.33	21	1 29 12.54	9 21 25.6
22	23 49 14.03	3 46 57.8	173.35	22	1 31 18.65	9 37 3.0
23	23 51 24.93	S. 3 29 37.7	173.37	23	1 33 24.77	N. 9 52 36.3
FRIDAY 18.				SUNDAY 20.		
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]
0	23 53 35.61	S. 3 12 17.5	173.35	0	1 35 30.91	N. 10 8 5.3
1	23 55 46.08	2 54 57.4	173.33	1	1 37 37.07	10 23 30.0
2	23 57 56.33	2 37 37.4	173.27	2	1 39 43.25	10 38 50.2
3	0 0 6.38	2 20 17.8	173.22	3	1 41 49.46	10 54 6.0
4	0 2 16.23	2 2 58.5	173.13	4	1 43 55.71	11 9 17.3
5	0 4 25.88	1 45 39.7	173.02	5	1 46 1.99	11 24 24.0
6	0 6 35.35	1 28 21.6	172.90	6	1 48 8.32	11 39 26.0
7	0 8 44.63	1 11 4.2	172.78	7	1 50 14.68	11 54 23.2
8	0 10 53.74	0 53 47.5	172.62	8	1 52 21.10	12 9 15.7
9	0 13 2.67	0 36 31.8	172.43	9	1 54 27.57	12 24 3.3
10	0 15 11.43	0 19 17.2	172.27	10	1 56 34.09	12 38 46.0
11	0 17 20.03	S. 0 2 3.6	172.05	11	1 58 40.68	12 53 23.7
12	0 19 28.47	N. 0 15 8.7	171.83	12	2 0 47.32	13 7 56.3
13	0 21 36.76	0 32 19.7	171.58	13	2 2 54.04	13 22 23.8
14	0 23 44.91	0 49 29.2	171.33	14	2 5 0.82	13 36 46.2
15	0 25 52.91	1 6 37.2	171.08	15	2 7 7.68	13 51 3.3
16	0 28 0.78	1 23 43.7	170.78	16	2 9 14.62	14 5 15.1
17	0 30 8.52	1 40 48.4	170.47	17	2 11 21.64	14 19 21.5
18	0 32 16.13	1 57 51.2	170.17	18	2 13 28.74	14 33 22.6
19	0 34 23.62	2 14 52.2	169.83	19	2 15 35.93	14 47 18.1
20	0 36 30.99	2 31 51.2	169.48	20	2 17 43.21	15 1 8.1
21	0 38 38.26	2 48 48.1	169.13	21	2 19 50.58	15 14 52.5
22	0 40 45.42	3 5 42.9	168.75	22	2 21 58.05	15 28 31.3
23	0 42 52.47	3 22 35.4	168.35	23	2 24 5.61	15 42 4.3
24	0 44 59.44	N. 3 39 25.5		24	2 26 13.28	N. 15 55 31.6

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

hr.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 21.				WEDNESDAY 23.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	2 26 13.28	N. 15 55 31.6	133.57	0	4 10 53.85	N. 24 31 48.1	77.57
1	2 28 21.05	16 8 53.0	132.60	1	4 13 8.12	24 39 33.5	76.23
2	2 30 28.93	16 22 8.6	131.60	2	4 15 22.51	24 47 10.9	74.90
3	2 32 36.92	16 35 18.2	130.60	3	4 17 37.03	24 54 40.3	73.57
4	2 34 45.01	16 48 21.8	129.60	4	4 19 51.68	25 2 1.7	72.22
5	2 36 53.22	17 1 19.4	128.58	5	4 22 6.45	25 9 15.0	70.87
6	2 39 1.55	17 14 10.9	127.57	6	4 24 21.34	25 16 20.2	69.52
7	2 41 10.00	17 26 56.3	126.52	7	4 26 36.35	25 23 17.3	68.17
8	2 43 18.56	17 39 35.4	125.48	8	4 28 51.48	25 30 6.3	66.82
9	2 45 27.25	17 52 8.3	124.43	9	4 31 6.73	25 36 47.2	65.43
10	2 47 36.06	18 4 34.9	123.37	10	4 33 22.08	25 43 19.8	64.07
11	2 49 45.00	18 16 55.1	122.30	11	4 35 37.55	25 49 44.2	62.70
12	2 51 54.07	18 29 8.9	121.23	12	4 37 53.12	25 56 0.4	61.32
13	2 54 3.27	18 41 16.3	120.13	13	4 40 8.80	26 2 8.3	59.95
14	2 56 12.59	18 53 17.1	119.05	14	4 42 24.57	26 8 8.0	58.55
15	2 58 22.05	19 5 11.4	117.95	15	4 44 40.45	26 13 59.3	57.17
16	3 0 31.64	19 16 59.1	116.85	16	4 46 56.41	26 19 42.3	55.78
17	3 2 41.37	19 28 40.2	115.72	17	4 49 12.48	26 25 17.0	54.37
18	3 4 51.24	19 40 14.5	114.60	18	4 51 28.63	26 30 43.2	52.98
19	3 7 1.25	19 51 42.1	113.47	19	4 53 44.86	26 36 1.1	51.58
20	3 9 11.39	20 3 2.9	112.32	20	4 56 1.18	26 41 10.6	50.18
21	3 11 21.68	20 14 16.8	111.18	21	4 58 17.57	26 46 11.7	48.77
22	3 13 32.11	20 25 23.9	110.02	22	5 0 34.04	26 51 4.3	47.37
23	3 15 42.68	N. 20 36 24.0	108.85	23	5 2 50.58	N. 26 55 48.5	45.95
TUESDAY 22.				THURSDAY 24.			
0	3 17 53.39	N. 20 47 17.1	107.68	0	5 5 7.19	N. 27 0 24.2	44.53
1	3 20 4.25	20 58 3.2	106.50	1	5 7 23.86	27 4 51.4	43.12
2	3 22 15.25	21 8 42.2	105.32	2	5 9 40.60	27 9 10.1	41.70
3	3 24 26.40	21 19 14.1	104.12	3	5 11 57.38	27 13 20.3	40.28
4	3 26 37.69	21 29 38.8	102.93	4	5 14 14.22	27 17 22.0	38.85
5	3 28 49.13	21 39 56.4	101.70	5	5 16 31.11	27 21 15.1	37.43
6	3 31 0.72	21 50 6.6	100.50	6	5 18 48.05	27 24 59.7	36.02
7	3 33 12.45	22 0 9.6	99.28	7	5 21 5.02	27 28 35.8	34.58
8	3 35 24.33	22 10 5.3	98.05	8	5 23 22.03	27 32 3.3	33.15
9	3 37 36.35	22 19 53.6	96.82	9	5 25 39.07	27 35 22.2	31.73
10	3 39 48.52	22 29 34.5	95.58	10	5 27 56.14	27 38 32.6	30.30
11	3 42 0.84	22 39 8.0	94.32	11	5 30 13.23	27 41 34.4	28.87
12	3 44 13.30	22 48 33.9	93.07	12	5 32 30.34	27 44 27.6	27.43
13	3 46 25.90	22 57 52.3	91.82	13	5 34 47.46	27 47 12.2	26.02
14	3 48 38.65	23 7 3.2	90.55	14	5 37 4.60	27 49 48.3	24.57
15	3 50 51.54	23 16 6.5	89.27	15	5 39 21.74	27 52 15.7	23.15
16	3 53 4.57	23 25 2.1	88.00	16	5 41 38.88	27 54 34.6	21.72
17	3 55 17.75	23 33 50.1	86.70	17	5 43 56.02	27 56 44.9	20.28
18	3 57 31.06	23 42 30.3	85.42	18	5 46 13.15	27 58 46.6	18.85
19	3 59 44.52	23 51 2.8	84.13	19	5 48 30.27	28 0 39.7	17.42
20	4 1 58.11	23 59 27.6	82.82	20	5 50 47.37	28 2 24.2	15.98
21	4 4 11.84	24 7 44.5	81.52	21	5 53 4.45	28 4 0.1	14.55
22	4 6 25.71	24 15 53.6	80.20	22	5 55 21.51	28 5 27.4	13.13
23	4 8 39.71	24 23 54.8	78.88	23	5 57 38.54	28 6 46.2	11.70
24	4 10 53.85	N. 24 31 48.1		24	5 59 55.53	N. 28 7 56.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 25.				SUNDAY 27.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	5 59 55.53	N. 28 7 56.4	10.27	0	7 47 21.24	N. 26 21 38.8	34
1	6 2 12.49	28 8 58.0	8.85	1	7 49 31.19	26 16 13.8	33
2	6 4 29.40	28 9 51.1	7.42	2	7 51 40.91	26 10 41.6	34
3	6 6 46.26	28 10 35.6	6.00	3	7 53 50.40	26 5 2.2	37
4	6 9 3.07	28 11 11.6	4.57	4	7 55 59.65	25 59 15.6	38
5	6 11 19.82	28 11 39.0	3.15	5	7 58 8.67	25 53 21.9	39
6	6 13 36.50	28 11 57.9	1.75	6	8 0 17.45	25 47 21.1	40
7	6 15 53.12	28 12 8.4	0.32	7	8 2 25.98	25 41 13.3	41
8	6 18 9.66	28 12 10.3	1.10	8	8 4 34.28	25 34 58.5	42
9	6 20 26.13	28 12 3.7	2.50	9	8 6 42.33	25 28 36.8	43
10	6 22 42.52	28 11 48.7	3.90	10	8 8 50.14	25 22 8.1	44
11	6 24 58.81	28 11 25.3	5.32	11	8 10 57.70	25 15 32.6	45
12	6 27 15.02	28 10 53.4	6.72	12	8 13 5.01	25 8 50.3	46
13	6 29 31.13	28 10 13.1	8.12	13	8 15 12.07	25 2 1.3	47
14	6 31 47.13	28 9 24.4	9.52	14	8 17 18.88	24 55 5.5	48
15	6 34 3.03	28 8 27.3	10.90	15	8 19 25.44	24 48 3.1	49
16	6 36 18.81	28 7 21.9	12.28	16	8 21 31.74	24 40 54.1	50
17	6 38 34.48	28 6 8.2	13.68	17	8 23 37.79	24 33 38.5	51
18	6 40 50.03	28 4 46.1	15.05	18	8 25 43.58	24 26 16.4	52
19	6 43 5.46	28 3 15.8	16.43	19	8 27 49.11	24 18 47.8	53
20	6 45 20.76	28 1 37.2	17.82	20	8 29 54.39	24 11 12.9	54
21	6 47 35.93	27 59 50.3	19.17	21	8 31 59.41	24 3 31.5	55
22	6 49 50.96	27 57 55.3	20.55	22	8 34 4.16	23 55 43.8	56
23	6 52 5.85	N. 27 55 52.0	21.90	23	8 36 8.66	N. 23 47 49.9	57
SATURDAY 26.				MONDAY 28.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	6 54 20.60	N. 27 53 40.6	23.25	0	8 38 12.90	N. 23 39 49.7	58
1	6 56 35.20	27 51 21.1	24.62	1	8 40 16.88	23 31 43.4	59
2	6 58 49.64	27 48 53.4	25.95	2	8 42 20.60	23 23 30.9	60
3	7 1 3.93	27 46 17.7	27.28	3	8 44 24.05	23 15 12.3	61
4	7 3 18.06	27 43 34.0	28.63	4	8 46 27.25	23 6 47.8	62
5	7 5 32.02	27 40 42.2	29.97	5	8 48 30.19	22 58 17.2	63
6	7 7 45.81	27 37 42.4	31.28	6	8 50 32.86	22 49 40.8	64
7	7 9 59.43	27 34 34.7	32.62	7	8 52 35.28	22 40 58.4	65
8	7 12 12.88	27 31 19.0	33.92	8	8 54 37.44	22 32 10.3	66
9	7 14 26.14	27 27 55.5	35.23	9	8 56 39.33	22 23 16.3	67
10	7 16 39.22	27 24 24.1	36.55	10	8 58 40.97	22 14 16.7	68
11	7 18 52.12	27 20 44.8	37.83	11	9 0 42.35	22 5 11.4	69
12	7 21 4.82	27 16 57.8	39.13	12	9 2 43.47	21 56 0.4	70
13	7 23 17.33	27 13 3.0	40.42	13	9 4 44.34	21 46 43.9	71
14	7 25 29.64	27 9 0.5	41.70	14	9 6 44.95	21 37 21.9	72
15	7 27 41.75	27 4 50.3	42.98	15	9 8 45.30	21 27 54.4	73
16	7 29 53.66	27 0 32.4	44.23	16	9 10 45.40	21 18 21.5	74
17	7 32 5.36	26 56 7.0	45.52	17	9 12 45.24	21 8 43.2	75
18	7 34 16.85	26 51 33.9	46.75	18	9 14 44.83	20 58 59.7	76
19	7 36 28.13	26 46 53.4	48.02	19	9 16 44.17	20 49 10.8	77
20	7 38 39.19	26 42 5.3	49.27	20	9 18 43.25	20 39 16.8	78
21	7 40 50.04	26 37 9.7	50.48	21	9 20 42.09	20 29 17.5	79
22	7 43 0.66	26 32 6.8	51.72	22	9 22 40.67	20 19 13.2	80
23	7 45 11.06	26 26 56.5	52.95	23	9 24 39.01	20 9 3.8	81
24	7 47 21.24	N. 26 21 38.8		24	9 26 37.09	N. 19 58 49.4	82

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 29.				THURSDAY 31.		
^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
9 26 37.09	N. 19 58 49.4	103.23	0	10 56 55.17	N. 10 25 46.5	132.97
9 28 34.93	19 48 30.0	104.05	1	10 58 43.90	10 12 28.7	133.40
9 30 32.53	19 38 5.7	104.85	2	11 0 32.50	9 59 8.3	133.80
9 32 29.89	19 27 36.6	105.65	3	11 2 21.00	9 45 45.5	134.20
9 34 27.01	19 17 2.7	106.45	4	11 4 9.38	9 32 20.3	134.60
9 36 23.89	19 6 24.0	107.23	5	11 5 57.65	9 18 52.7	134.98
9 38 20.53	18 55 40.6	108.02	6	11 7 45.82	9 5 22.8	135.37
9 40 16.93	18 44 52.5	108.77	7	11 9 33.89	8 51 50.6	135.73
9 42 13.10	18 33 59.9	109.52	8	11 11 21.86	8 38 16.2	136.10
9 44 9.04	18 23 2.8	110.28	9	11 13 9.73	8 24 39.6	136.45
9 46 4.75	18 12 1.1	111.02	10	11 14 57.52	8 11 0.9	136.80
9 48 0.23	18 0 55.0	111.75	11	11 16 45.22	7 57 20.1	137.13
9 49 55.49	17 49 44.5	112.47	12	11 18 32.83	7 43 37.3	137.47
9 51 50.52	17 38 29.7	113.18	13	11 20 20.37	7 29 52.5	137.78
9 53 45.34	17 27 10.6	113.88	14	11 22 7.82	7 16 5.8	138.10
9 55 39.93	17 15 47.3	114.58	15	11 23 55.21	7 2 17.2	138.42
9 57 34.30	17 4 19.8	115.27	16	11 25 42.53	6 48 26.7	138.72
9 59 28.47	16 52 48.2	115.95	17	11 27 29.79	6 34 34.4	139.00
10 1 22.41	16 41 12.5	116.63	18	11 29 16.98	6 20 40.4	139.30
10 3 16.15	16 29 32.7	117.28	19	11 31 4.12	6 6 44.6	139.57
10 5 9.68	16 17 49.0	117.95	20	11 32 51.20	5 52 47.2	139.83
10 7 3.01	16 6 1.3	118.60	21	11 34 38.24	5 38 48.2	140.08
10 8 56.13	15 54 9.7	119.23	22	11 36 25.23	5 24 47.7	140.35
10 10 49.05	N. 15 42 14.3	119.87	23	11 38 12.17	N. 5 10 45.6	140.60
WEDNESDAY 30.				FRIDAY, SEPT. 1.		
10 12 41.78	N. 15 30 15.1	120.50	0	11 39 59.08	N. 4 56 42.0	
10 14 34.31	15 18 12.1	121.10				
10 16 26.64	15 6 5.5	121.72				
10 18 18.79	14 53 55.2	122.32				
10 20 10.75	14 41 41.3	122.90				
10 22 2.52	14 29 23.9	123.48				
10 23 54.11	14 17 3.0	124.07				
10 25 45.53	14 4 38.6	124.62				
10 27 36.76	13 52 10.9	125.18				
10 29 27.83	13 39 39.8	125.73				
10 31 18.72	13 27 5.4	126.27				
10 33 9.45	13 14 27.8	126.80				
10 35 0.01	13 1 47.0	127.32				
10 36 50.42	12 49 3.1	127.85				
10 38 40.66	12 36 16.0	128.33				
10 40 30.76	12 23 26.0	128.85				
10 42 20.70	12 10 32.9	129.33				
10 44 10.49	11 57 36.9	129.82				
10 46 0.14	11 44 38.0	130.28				
10 47 49.64	11 31 36.3	130.77				
10 49 39.01	11 18 31.7	131.22				
10 51 28.24	11 5 24.4	131.67				
10 53 17.34	10 52 14.4	132.10				
10 55 6.32	10 39 1.8	132.55				
10 56 55.17	N. 10 25 46.5					

PHASES OF THE MOON.

● New Moon	- - -	^d ^h ^m	1 0 19.6
☾ First Quarter	- -		9 1 22.0
○ Full Moon	- - -		15 17 38.8
☾ Last Quarter	- -		22 13 16.1
● New Moon	- - -		30 16 0.2

☾ Apogee	- - - - -	^d ^h	1 14
☾ Perigee	- - - - -		15 13
☾ Apogee	- - - - -		28 17

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.		Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .
2	Spica $\pi\gamma$	E.	61 13 21	3081	59 44 48	3080	58 16 14	3079	56 47 39
	Saturn	E.	79 57 49	3096	78 29 35	3095	77 1 19	3093	75 33 3
	Antares	E.	107 6 34	3077	105 37 56	3076	104 9 17	3075	102 40 37
3	SUN	W.	- - -	- - -	- - -	- - -	24 39 7	3516	25 59 14
	Spica $\pi\gamma$	E.	49 24 27	3072	47 55 43	3070	46 26 57	3068	44 58 8
	Saturn	E.	68 11 26	3087	66 43 1	3086	65 14 34	3084	63 46 5
4	Antares	E.	95 16 55	3066	93 48 4	3064	92 19 11	3062	90 50 13
	SUN	W.	32 42 33	3459	34 3 43	3452	35 25 1	3444	36 46 28
	Spica $\pi\gamma$	E.	37 33 18	3052	36 4 10	3048	34 34 57	3045	33 5 40
5	Saturn	E.	56 22 48	3067	54 53 58	3063	53 25 3	3060	51 56 4
	Antares	E.	83 24 38	3043	81 55 18	3039	80 25 53	3034	78 56 22
	SUN	W.	43 35 58	3395	44 58 20	3387	46 20 51	3378	47 43 33
6	Venus	W.	22 7 42	3495	23 28 12	3486	24 48 52	3477	26 9 42
	Spica $\pi\gamma$	E.	25 38 4	3022	24 8 18	3018	22 38 28	3014	21 8 33
	Saturn	E.	44 29 49	3033	43 0 17	3027	41 30 38	3022	40 0 52
7	Antares	E.	71 27 17	3002	69 57 7	2996	68 26 49	2989	66 56 23
	SUN	W.	54 39 33	3323	56 3 18	3312	57 27 16	3301	58 51 26
	Venus	W.	32 56 46	3415	34 18 45	3404	35 40 57	3393	37 3 21
8	Saturn	E.	32 30 19	2987	30 59 50	2981	29 29 14	2976	27 58 31
	Antares	E.	59 21 55	2943	57 50 31	2935	56 18 56	2926	54 47 10
	α Aquilæ	E.	107 32 55	2871	106 19 6	2848	105 4 53	2825	103 50 17
9	SUN	W.	65 55 35	3231	67 21 8	3219	68 46 55	3204	70 12 59
	Venus	W.	43 58 44	3321	45 22 31	3307	46 46 34	3294	48 10 52
	Antares	E.	47 5 9	2864	45 32 4	2852	43 58 44	2841	42 25 9
10	α Aquilæ	E.	97 32 2	2719	96 15 26	2694	94 58 32	2678	93 41 21
	SUN	W.	77 27 27	3119	78 55 13	3103	80 23 19	3088	81 51 43
	Venus	W.	55 16 37	3206	56 42 39	3190	58 9 0	3174	59 35 40
11	Mars	W.	24 15 45	2985	25 46 16	2970	27 17 6	2954	28 48 16
	Spica $\pi\gamma$	W.	11 36 44	2841	13 10 18	2810	14 44 33	2784	16 19 22
	Antares	E.	34 33 11	2764	32 57 56	2750	31 22 22	2736	29 46 30
12	α Aquilæ	E.	87 11 40	2598	85 53 3	2587	84 34 15	2577	83 15 16
	SUN	W.	89 18 49	2987	90 49 18	2970	92 20 8	2952	93 51 21
	Venus	W.	66 54 7	3071	68 22 52	3053	69 51 59	3035	71 21 29
13	Mars	W.	36 29 13	2856	38 2 28	2838	39 36 6	2821	41 10 7
	Spica $\pi\gamma$	W.	24 20 37	2660	25 58 10	2642	27 36 8	2624	29 14 31
	Antares	E.	21 42 15	2646	20 4 23	2632	18 26 12	2618	16 47 41
14	α Aquilæ	E.	76 38 13	2538	75 18 31	2535	73 58 46	2534	72 38 59
	Fomalhaut	E.	103 53 31	2846	102 20 3	2827	100 46 10	2808	99 11 53
	SUN	W.	101 33 14	2841	103 6 48	2823	104 40 46	2803	106 15 10
15	Venus	W.	78 54 51	2920	80 26 44	2901	81 59 1	2881	83 31 44
	Mars	W.	49 5 59	2713	50 42 22	2694	52 19 10	2675	53 56 23
	Spica $\pi\gamma$	W.	37 32 40	2514	39 13 34	2496	40 54 53	2477	42 36 38
16	Saturn	W.	18 47 15	2598	20 26 13	2569	22 5 51	2542	23 46 6
	α Aquilæ	E.	66 0 49	2563	64 41 34	2576	63 22 33	2590	62 3 48
	Fomalhaut	E.	91 14 25	2699	89 37 44	2682	88 0 40	2664	86 23 12
17	α Pegasi	E.	111 45 34	2892	110 13 5	2866	108 40 2	2841	107 6 27

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
2	Spica $\eta\gamma$ E.	55 19 4 3078		53 50 27 3077		52 21 49 3075		50 53 9 3073	
	Saturn γ E.	74 4 47 3093		72 36 29 3092		71 8 10 3091		69 39 49 3089	
	Antares α E.	101 11 56 3073		99 43 14 3072		98 14 30 3070		96 45 44 3068	
3	SUN δ W.	27 19 32 3495		28 40 2 3485		30 0 43 3477		31 21 33 3468	
	Spica $\eta\gamma$ E.	43 29 17 3063		42 0 22 3061		40 31 24 3058		39 2 23 3055	
	Saturn γ E.	62 17 32 3078		60 48 56 3076		59 20 17 3073		57 51 34 3070	
	Antares α E.	89 21 15 3056		87 52 12 3053		86 23 5 3050		84 53 54 3046	
4	SUN δ W.	38 8 5 3428		39 29 50 3421		40 51 43 3412		42 13 46 3404	
	Spica $\eta\gamma$ E.	31 36 18 3038		30 6 52 3034		28 37 21 3030		27 7 45 3026	
	Saturn γ E.	50 27 0 3052		48 57 51 3047		47 28 36 3042		45 59 15 3038	
	Antares α E.	77 26 46 3025		75 57 4 3019		74 27 15 3014		72 57 20 3008	
5	SUN δ W.	49 6 24 3361		50 29 25 3352		51 52 36 3342		53 15 59 3332	
	Venus δ W.	27 30 44 3456		28 51 57 3446		30 13 22 3436		31 34 58 3425	
	Spica $\eta\gamma$ E.	19 38 35 3010		18 8 34 3007		16 38 30 3008		15 8 27 3010	
	Saturn γ E.	38 31 0 3011		37 1 1 3005		35 30 54 2999		34 0 40 2993	
	Antares α E.	65 25 48 2975		63 55 4 2968		62 24 11 2960		60 53 8 2952	
6	SUN δ W.	60 15 49 3279		61 40 25 3268		63 5 14 3255		64 30 18 3244	
	Venus δ W.	38 25 58 3370		39 48 49 3358		41 11 53 3346		42 35 11 3333	
	Saturn γ E.	26 27 41 2965		24 56 45 2962		23 25 44 2958		21 54 38 2955	
	Antares α E.	53 15 12 2906		51 43 1 2896		50 10 37 2886		48 38 0 2875	
	α Aquilæ E.	102 35 19 3784		101 20 0 3764		100 4 20 3745		98 48 20 3727	
7	SUN δ W.	71 39 18 3177		73 5 55 3163		74 32 48 3149		75 59 58 3134	
	Venus δ W.	49 35 27 3265		51 0 19 3252		52 25 27 3237		53 50 53 3221	
	Antares α E.	40 51 19 2816		39 17 12 2804		37 42 49 2791		36 8 9 2777	
	α Aquilæ E.	92 23 54 3649		91 6 12 3635		89 48 15 3622		88 30 4 3610	
8	SUN δ W.	83 20 27 3055		84 49 32 3039		86 18 56 3022		87 48 42 3005	
	Venus δ W.	61 2 41 3141		62 30 1 3124		63 57 42 3106		65 25 44 3089	
	Mars δ W.	30 19 46 2923		31 51 36 2906		33 23 47 2890		34 56 19 2873	
	Spica $\eta\gamma$ W.	17 54 42 2738		19 30 31 2718		21 6 47 2699		22 43 29 2679	
	Antares α E.	28 10 19 2707		26 33 48 2692		24 56 57 2677		23 19 46 2662	
	α Aquilæ E.	81 56 7 3560		80 36 49 3543		79 17 23 3547		77 57 51 3542	
9	SUN δ W.	95 22 57 2916		96 54 56 2898		98 27 18 2879		100 0 4 2860	
	Venus δ W.	72 51 22 2997		74 21 39 2978		75 52 19 2959		77 23 23 2940	
	Mars δ W.	42 44 30 2785		44 19 17 2768		45 54 27 2750		47 30 1 2731	
	Spica $\eta\gamma$ W.	30 53 19 2587		32 32 32 2569		34 12 9 2551		35 52 12 2533	
	Antares α E.	15 8 48 2588		13 29 36 2574		11 50 5 2563		10 10 19 2554	
	α Aquilæ E.	71 19 13 3536		69 59 29 3540		68 39 49 3545		67 20 15 3553	
	Fomalhaut E.	97 37 11 2772		96 2 6 2753		94 26 36 2734		92 50 42 2717	
10	SUN δ W.	107 49 58 2766		109 25 11 2747		111 0 49 2728		112 36 52 2709	
	Venus δ W.	85 4 52 2842		86 38 25 2822		88 12 24 2802		89 46 49 2783	
	Mars δ W.	55 34 1 2638		57 12 4 2619		58 50 33 2601		60 29 27 2582	
	Spica $\eta\gamma$ W.	44 18 49 2441		46 1 25 2422		47 44 28 2404		49 27 57 2386	
	Saturn γ W.	25 26 56 2493		27 8 19 2470		28 50 15 2448		30 32 42 2427	
	α Aquilæ E.	60 45 24 3631		59 27 23 3657		58 9 50 3687		56 52 49 3723	
	Fomalhaut E.	84 45 21 2630		83 7 7 2613		81 28 30 2598		79 49 32 2583	
	α Pegasi E.	105 32 20 2792		103 57 42 2769		102 22 33 2747		100 46 55 2725	

MEAN TIME.

LUNAR DISTANCES.

the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
11	Sun W.	° 43 25	2616	° 21 58	2598	° 0 56	2580	° 40 18	2562
	Venus W.	97 45 18	2685	99 22 18	2666	100 59 43	2647	102 37 34	2629
	Mars W.	68 50 25	2489	70 31 54	2471	72 13 48	2453	73 56 8	2436
	Spica π W.	58 11 54	2296	59 57 59	2278	61 44 30	2261	63 31 27	2244
	Saturn W.	39 12 20	2326	40 57 41	2308	42 43 29	2289	44 29 45	2271
	Fomalhaut E.	71 29 31	2511	69 48 33	2499	68 7 18	2487	66 25 46	2477
	α Pegasi E.	92 41 43	2625	91 3 22	2607	89 24 36	2590	87 45 27	2574
12	Venus W.	110 52 55	2541	112 33 11	2525	114 13 50	2509	115 54 51	2493
	Mars W.	82 33 55	2351	84 18 41	2335	86 3 49	2320	87 49 19	2306
	Spica π W.	72 32 24	2163	74 21 47	2148	76 11 33	2133	78 1 42	2118
	Saturn W.	53 27 31	2186	55 16 19	2170	57 5 31	2156	58 55 5	2141
	Antares W.	26 37 52	2163	28 27 15	2147	30 17 2	2132	32 7 12	2118
	Fomalhaut E.	57 54 59	2441	56 12 23	2438	54 29 43	2437	52 47 1	2439
	α Pegasi E.	79 24 34	2507	77 43 31	2496	76 2 12	2487	74 20 41	2480
13	Venus W.	124 25 8	2424	126 8 9	2412	- - -	- - -	- - -	- - -
	Mars W.	96 42 0	2239	98 29 30	2227	100 17 17	2216	102 5 20	2207
	Spica π W.	87 17 38	2055	89 9 47	2044	91 2 13	2033	92 54 55	2024
	Saturn W.	68 8 16	2075	69 59 53	2064	71 51 47	2054	73 43 57	2044
	Antares W.	41 23 18	2053	43 15 29	2042	45 7 58	2032	47 0 43	2021
	Fomalhaut E.	44 15 17	2487	42 33 46	2509	40 52 45	2535	39 12 21	2568
	α Pegasi E.	65 51 6	2464	64 9 1	2466	62 27 0	2470	60 45 5	2477
14	Mars W.	111 8 59	2165	112 58 19	2160	114 47 47	2156	116 37 21	2152
	Spica π W.	102 21 53	1985	104 15 50	1979	106 9 57	1975	108 4 11	1971
	Saturn W.	83 8 20	2005	85 1 47	2000	86 55 22	1995	88 49 5	1990
	Antares W.	56 27 59	1982	58 22 1	1977	60 16 12	1972	62 10 30	1968
	Fomalhaut E.	31 5 20	2876	29 32 30	2982	- - -	- - -	- - -	- - -
	α Pegasi E.	52 19 8	2554	50 39 10	2580	48 59 48	2612	47 21 9	2649
	α Arietis E.	92 3 24	2035	90 10 44	2030	88 17 56	2025	86 25 0	2021
15	Saturn W.	98 18 49	1982	100 12 51	1984	102 6 51	1985	104 0 49	1988
	Antares W.	71 43 12	1959	73 37 51	1961	75 32 27	1962	77 27 1	1964
	α Pegasi E.	39 23 7	2942	37 51 41	3031	36 22 7	3135	34 54 40	3259
	α Arietis E.	76 59 20	2015	75 6 10	2017	73 13 3	2020	71 20 0	2023
	Aldebaran E.	107 26 0	2016	105 32 51	2016	103 39 42	2017	101 46 34	2019
16	Saturn W.	113 29 8	2014	115 22 21	2021	117 15 23	2026	119 8 16	2032
	Antares W.	86 58 32	1988	88 52 26	1995	90 46 8	2003	92 39 38	2012
	α Arietis E.	61 56 41	2057	60 4 35	2066	58 12 44	2077	56 21 10	2090
	Aldebaran E.	92 22 2	2040	90 29 30	2048	88 37 10	2055	86 45 2	2064
17	Antares W.	102 3 26	2064	103 55 21	2077	105 46 56	2090	107 38 11	2103
	α Aquilæ W.	57 54 49	3312	59 18 47	3277	60 43 25	3247	62 8 39	3220
	α Arietis E.	47 8 29	2166	45 19 11	2186	43 30 22	2206	41 42 4	2229
	Aldebaran E.	77 28 9	2120	75 37 40	2133	73 47 31	2147	71 57 44	2163
18	α Aquilæ W.	69 20 53	3149	70 48 3	3144	72 15 19	3143	73 42 37	3142
	Fomalhaut W.	37 33 0	2726	39 9 5	2701	40 45 43	2682	42 22 47	2668
	α Arietis E.	32 49 47	2373	31 5 33	2411	29 22 14	2453	27 39 55	2501
	Aldebaran E.	62 54 45	2246	61 7 26	2265	59 20 35	2285	57 34 13	2305
19	α Aquilæ W.	80 58 20	3173	82 25 2	3184	83 51 30	3197	85 17 43	3211

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	
19	Fomalhaut W.	44 0 10	2657	45 37 47	2650	47 15 34	2647	48 53 4	
	α Arietis E.	25 58 43	2556	24 18 47	2620	22 40 19	2694	21 3 1	
	Aldebaran E.	55 48 20	2326	54 2 58	2346	52 18 6	2368	50 33 4	
	Pollux E.	99 15 41	2247	97 28 23	2264	95 41 31	2282	93 55 1	
	SUN E.	- - -	-	- - -	-	131 8 1	2608	129 29 1	
20	α Aquilæ W.	86 43 39	3227	88 9 16	3244	89 34 33	3263	90 59 4	
	Fomalhaut W.	57 2 16	2668	58 39 39	2676	60 16 51	2686	61 53 4	
	α Pegasi W.	38 59 8	3319	40 22 57	3273	41 47 40	3236	43 13 1	
	Aldebaran E.	42 0 32	2516	40 19 41	2544	38 39 29	2574	36 59 3	
	Pollux E.	85 9 34	2392	83 25 48	2411	81 42 29	2430	79 59 3	
	SUN E.	121 21 55	2722	119 45 44	2741	118 9 58	2761	116 34 3	
21	α Aquilæ W.	97 57 52	3398	99 20 11	3425	100 41 59	3453	102 3 1	
	Fomalhaut W.	69 54 51	2760	71 30 12	2774	73 5 14	2788	74 39 5	
	α Pegasi W.	50 27 39	3118	51 55 27	3110	53 23 25	3105	54 51 2	
	Aldebaran E.	28 53 43	2792	27 19 5	2841	25 45 31	2896	24 13 1	
	Pollux E.	71 31 53	2542	69 51 38	2560	68 11 48	2578	66 32 2	
	SUN E.	108 44 29	2878	107 11 42	2898	105 39 21	2917	104 7 2	
22	Fomalhaut W.	82 28 46	2878	84 1 33	2894	85 34 0	2909	87 6 1	
	α Pegasi W.	62 12 6	3109	63 40 5	3113	65 7 59	3119	66 35 4	
	α Arietis W.	18 37 41	3219	20 3 28	3158	21 30 27	3113	22 58 2	
	Pollux E.	58 21 20	2683	56 44 17	2699	55 7 36	2716	53 31 1	
	SUN E.	96 33 37	3029	95 4 0	3047	93 34 45	3065	92 5 5	
23	Fomalhaut W.	94 41 54	3001	96 12 6	3016	97 41 59	3031	99 11 3	
	α Pegasi W.	73 52 32	3163	75 19 25	3172	76 46 7	3182	78 12 3	
	α Arietis W.	30 25 9	3009	31 55 11	3006	33 25 16	3005	34 55 2	
	Pollux E.	45 34 54	2808	44 0 36	2821	42 26 36	2836	40 52 5	
	SUN E.	84 46 33	3163	83 19 39	3178	81 53 3	3193	80 26 4	
24	α Pegasi W.	85 22 22	3240	86 47 44	3249	88 12 55	3260	89 37 2	
	α Arietis W.	42 25 30	3021	43 55 17	3025	45 24 59	3030	46 54 1	
	Aldebaran W.	- - -	-	- - -	-	16 30 8	3644	17 47 1	
	Pollux E.	33 8 39	2912	31 36 35	2923	30 4 45	2935	28 33 1	
	SUN E.	73 19 22	3273	71 54 39	3285	70 30 10	3297	69 5 1	
25	α Pegasi W.	96 39 49	3321	98 3 36	3331	99 27 12	3341	100 50 1	
	α Arietis W.	54 20 52	3062	55 49 48	3067	57 18 38	3072	58 47 1	
	Aldebaran W.	24 37 26	3294	26 1 45	3270	27 26 32	3250	28 51 4	
	Pollux E.	20 58 35	2997	19 28 18	3006	17 58 13	3017	16 28 1	
	SUN E.	62 7 46	3359	60 44 42	3367	59 21 48	3376	57 59 1	
26	α Arietis W.	66 9 37	3098	67 37 49	3102	69 5 56	3105	70 33 1	
	Aldebaran W.	36 1 9	3189	37 27 31	3184	38 53 59	3180	40 20 1	
	SUN E.	51 7 35	3419	49 45 40	3425	48 23 52	3431	47 2 1	
27	α Arietis W.	77 53 21	3121	79 21 5	3123	80 48 47	3125	82 16 1	
	Aldebaran W.	47 34 12	3163	49 1 5	3162	50 27 59	3161	51 54 5	
	SUN E.	40 15 10	3460	38 54 1	3463	37 32 56	3467	36 11 5	
28	α Arietis W.	89 34 23	3130	91 1 56	3131	92 29 28	3130	93 57 1	
	Aldebaran W.	59 10 9	3150	60 37 18	3148	62 4 29	3147	63 31 4	
	Pollux W.	14 53 5	3101	16 21 14	3097	17 49 27	3094	19 17 4	

MEAN TIME.

LUNAR DISTANCES.

the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
9	Fomalhaut W.	50 31 19	2646	52 9 11	2649	53 47 0	2654	55 24 42	2660
	α Arietis E.	19 28 44	2896	17 56 20	3035	- - -	- - -	- - -	- - -
	Aldebaran E.	48 49 59	2415	47 6 45	2438	45 24 5	2463	43 42 0	2489
	Pollux E.	92 9 5	2318	90 23 32	2337	88 38 26	2355	86 53 47	2373
	SUN E.	127 50 58	2645	126 13 4	2663	124 35 35	2683	122 58 32	2703
0	α Aquilæ W.	92 24 0	3304	93 48 7	3326	95 11 49	3349	96 35 4	3372
	Fomalhaut W.	63 30 33	2708	65 7 2	2720	66 43 16	2733	68 19 12	2746
	α Pegasi W.	44 39 8	3179	46 5 42	3157	47 32 43	3141	49 0 3	3128
	Aldebaran E.	35 21 10	2638	33 43 6	2672	32 5 48	2708	30 29 19	2748
	Pollux E.	78 17 12	2467	76 35 13	2486	74 53 40	2505	73 12 34	2523
	SUN E.	114 59 46	2800	113 25 18	2820	111 51 16	2840	110 17 40	2859
1	α Aquilæ W.	103 24 1	3511	104 44 13	3542	106 3 51	3577	107 22 50	3615
	Fomalhaut W.	76 14 22	2818	77 48 27	2832	79 22 13	2848	80 55 39	2863
	α Pegasi W.	56 19 37	3100	57 47 46	3100	59 15 55	3102	60 44 2	3105
	Aldebaran E.	22 42 0	3028	21 12 22	3112	- - -	- - -	- - -	- - -
	Pollux E.	64 53 22	2614	63 14 46	2632	61 36 34	2649	59 58 46	2666
	SUN E.	102 35 52	2955	101 4 43	2974	99 33 58	2993	98 3 36	3011
2	Fomalhaut W.	88 37 56	2940	90 9 24	2955	91 40 33	2970	93 11 23	2985
	α Pegasi W.	68 3 25	3133	69 30 55	3139	70 58 17	3148	72 25 29	3155
	α Arietis W.	24 26 56	3054	25 56 2	3036	27 25 30	3023	28 55 14	3014
	Pollux E.	51 55 20	2747	50 19 43	2763	48 44 27	2778	47 9 30	2794
	SUN E.	90 37 20	3099	89 9 9	3115	87 41 17	3132	86 13 46	3147
3	Fomalhaut W.	100 40 48	3061	102 9 45	3076	103 38 24	3091	105 6 45	3106
	α Pegasi W.	79 38 57	3200	81 5 6	3210	82 31 3	3220	83 56 48	3230
	α Arietis W.	36 25 31	3006	37 55 37	3009	39 25 39	3012	40 55 37	3016
	Pollux E.	39 19 31	2862	37 46 24	2874	36 13 32	2887	34 40 57	2900
	SUN E.	79 0 44	3221	77 35 0	3235	76 9 32	3248	74 44 19	3261
4	α Pegasi W.	91 2 41	3280	92 27 15	3290	93 51 38	3300	95 15 49	3310
	α Arietis W.	48 24 3	3041	49 53 25	3047	51 22 40	3052	52 51 49	3056
	Aldebaran W.	19 7 31	3467	20 28 32	3407	21 50 40	3360	23 13 42	3324
	Pollux E.	27 1 49	2956	25 30 41	2966	23 59 46	2977	22 29 4	2987
	SUN E.	67 41 54	3319	66 18 4	3330	64 54 27	3339	63 31 1	3349
5	α Pegasi W.	102 13 47	3363	103 36 46	3374	104 59 32	3385	106 22 6	3396
	α Arietis W.	60 16 0	3081	61 44 33	3086	63 13 0	3091	64 41 21	3095
	Aldebaran W.	30 17 10	3222	31 42 53	3211	33 8 49	3203	34 34 55	3196
	Pollux E.	14 58 43	3039	13 29 19	3052	- - -	- - -	- - -	- - -
	SUN E.	56 36 30	3392	55 14 4	3399	53 51 46	3406	52 29 36	3414
6	α Arietis W.	72 1 59	3112	73 29 54	3115	74 57 46	3117	76 25 35	3119
	Aldebaran W.	41 47 10	3173	43 13 51	3171	44 40 35	3168	46 7 22	3166
	SUN E.	45 40 36	3441	44 19 6	3447	42 57 43	3451	41 36 24	3455
7	α Arietis W.	83 44 4	3127	85 11 41	3128	86 39 16	3129	88 6 50	3130
	Aldebaran W.	53 21 54	3157	54 48 55	3155	56 15 58	3153	57 43 3	3152
	SUN E.	34 50 58	3474	33 30 5	3479	32 9 17	3481	30 48 32	3485
8	α Arietis W.	95 24 33	3130	96 52 6	3130	98 19 39	3129	99 47 13	3129
	Aldebaran W.	64 58 57	3143	66 26 15	3140	67 53 36	3138	69 20 59	3135
	Pollux W.	20 46 3	3090	22 14 25	3087	23 42 50	3086	25 11 17	3084

CONFIGURATIONS OF THE SATELLITES OF JUPITER

THE SATELLITES OF JUPITER

are not visible this Month,

JUPITER being too near to the SUN.

ECLIPSES OF THE SATELLITES OF JUPITER.

THE ECLIPSES OF THE SATELLITES OF JUPITER

are not visible this Month,

JUPITER being too near to the SUN.

APPROXIMATE SIDEREAL TIMES
OF THE
OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER,
AND OF THE
TRANSITS OF THE SATELLITES AND THEIR SHADOWS
OVER THE DISC OF THE PLANET.

THE SATELLITES OF JUPITER

are not visible this Month,

JUPITER being too near to the SUN.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time	Mean Equinoctial Time, adding 0 ^d .778395. Days.	From Mean Noon of January 1.	
	At Mean Midnight,				of Transit		Day of the Year.	Fraction of the Year.
	Logarithm of				of the			
	A	B	C	D	First Point of Aries.			
1	+1.0741	-1.1967	+9.6600	-0.9101	^h 15 ^m 17 ^s 56.69	131	212	.580
2	1.0828	1.1906	9.6630	0.9112	15 14 0.78	132	213	.583
3	1.0912	1.1843	9.6660	0.9124	15 10 4.87	133	214	.586
4	+1.0993	-1.1778	+9.6689	-0.9135	15 6 8.97	134	215	.589
5	1.1072	1.1711	9.6717	0.9147	15 2 13.06	135	216	.591
6	1.1148	1.1641	9.6745	0.9158	14 58 17.16	136	217	.594
7	+1.1221	-1.1569	+9.6773	-0.9170	14 54 21.25	137	218	.597
8	1.1292	1.1495	9.6800	0.9181	14 50 25.34	138	219	.600
9	1.1361	1.1418	9.6827	0.9193	14 46 29.44	139	220	.602
0	+1.1428	-1.1338	+9.6854	-0.9204	14 42 33.52	140	221	.605
1	1.1492	1.1256	9.6880	0.9215	14 38 37.61	141	222	.608
2	1.1554	1.1171	9.6906	0.9227	14 34 41.69	142	223	.611
3	+1.1614	-1.1083	+9.6931	-0.9238	14 30 45.78	143	224	.613
4	1.1672	1.0991	9.6956	0.9249	14 26 49.86	144	225	.616
5	1.1728	1.0897	9.6980	0.9260	14 22 53.95	145	226	.619
6	+1.1782	-1.0799	+9.7004	-0.9271	14 18 58.04	146	227	.621
7	1.1835	1.0697	9.7028	0.9281	14 15 2.14	147	228	.624
8	1.1886	1.0592	9.7051	0.9292	14 11 6.23	148	229	.627
9	+1.1934	-1.0483	+9.7074	-0.9302	14 7 10.33	149	230	.630
0	1.1981	1.0370	9.7097	0.9313	14 3 14.42	150	231	.632
1	1.2027	1.0252	9.7120	0.9323	13 59 18.52	151	232	.635
2	+1.2071	-1.0130	+9.7142	-0.9333	13 55 22.61	152	233	.638
3	1.2113	1.0003	9.7164	0.9343	13 51 26.70	153	234	.641
4	1.2153	0.9870	9.7185	0.9352	13 47 30.78	154	235	.643
5	+1.2192	-0.9732	+9.7206	-0.9362	13 43 34.87	155	236	.646
6	1.2229	0.9589	9.7227	0.9371	13 39 38.96	156	237	.649
7	1.2265	0.9439	9.7247	0.9380	13 35 43.04	157	238	.652
8	+1.2300	-0.9282	+9.7267	-0.9389	13 31 47.13	158	239	.654
9	1.2333	0.9118	9.7287	0.9397	13 27 51.22	159	240	.657
0	1.2364	0.8947	9.7307	0.9406	13 23 55.31	160	241	.660
1	1.2394	0.8767	9.7327	0.9414	13 19 59.41	161	242	.663
2	+1.2422	-0.8577	+9.7346	-0.9422	13 16 3.51	162	243	.665

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	D
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.			
		h m s	s	° ' "	"	m s	m s	s
Frid.	1	10 41 36.24	9.072	N. 8 17 1.8	54.70	1 4.36	0 9.46	0.
Sat.	2	10 45 13.97	9.060	7 55 9.1	55.01	1 4.32	0 28.22	0.
Sun.	3	10 48 51.41	9.048	7 33 8.8	55.32	1 4.28	0 47.28	0.
Mon.	4	10 52 28.57	9.038	7 11 1.2	55.61	1 4.24	1 6.61	0.
Tues.	5	10 56 5.48	9.028	6 48 46.6	55.88	1 4.21	1 26.20	0.
Wed.	6	10 59 42.15	9.018	6 26 25.4	56.14	1 4.18	1 46.03	0.
Thur.	7	11 3 18.59	9.010	6 3 58.0	56.39	1 4.15	2 6.10	0.
Frid.	8	11 6 54.83	9.002	5 41 24.6	56.63	1 4.12	2 26.36	0.
Sat.	9	11 10 30.88	8.995	5 18 45.6	56.84	1 4.10	2 46.81	0.
Sun.	10	11 14 6.76	8.989	4 56 1.4	57.05	1 4.08	3 7.43	0.
Mon.	11	11 17 42.50	8.983	4 33 12.2	57.24	1 4.06	3 28.20	0.
Tues.	12	11 21 18.10	8.980	4 10 18.4	57.43	1 4.05	3 49.10	0.
Wed.	13	11 24 53.61	8.975	3 47 20.2	57.59	1 4.04	4 10.09	0.
Thur.	14	11 28 29.02	8.973	3 24 18.1	57.74	1 4.03	4 31.16	0.
Frid.	15	11 32 4.38	8.972	3 1 12.3	57.89	1 4.02	4 52.29	0.
Sat.	16	11 35 39.71	8.972	2 38 3.0	58.02	1 4.02	5 13.45	0.
Sun.	17	11 39 15.03	8.973	2 14 50.6	58.14	1 4.01	5 34.63	0.
Mon.	18	11 42 50.37	8.975	1 51 35.3	58.24	1 4.01	5 55.77	0.
Tues.	19	11 46 25.76	8.977	1 28 17.5	58.33	1 4.02	6 16.89	0.
Wed.	20	11 50 1.20	8.980	1 4 57.5	58.41	1 4.03	6 37.95	0.
Thur.	21	11 53 36.71	8.985	0 41 35.7	58.48	1 4.04	6 58.94	0.
Frid.	22	11 57 12.34	8.990	N. 0 18 12.3	58.53	1 4.05	7 19.80	0.
Sat.	23	12 0 48.10	8.995	S. 0 5 12.4	58.56	1 4.07	7 40.55	0.
Sun.	24	12 4 23.99	9.002	0 28 37.8	58.58	1 4.09	8 1.16	0.
Mon.	25	12 8 0.04	9.010	0 52 3.8	58.59	1 4.11	8 21.60	0.
Tues.	26	12 11 36.27	9.018	1 15 29.8	58.59	1 4.14	8 41.88	0.
Wed.	27	12 15 12.70	9.027	1 38 55.7	58.55	1 4.17	9 1.95	0.
Thur.	28	12 18 49.35	9.037	2 2 21.0	58.51	1 4.20	9 21.79	0.
Frid.	29	12 22 26.23	9.047	2 25 45.3	58.45	1 4.23	9 41.40	0.
Sat.	30	12 26 3.36	9.058	2 49 8.2	58.38	1 4.27	10 0.77	0.
Sun.	31	12 29 40.76		S. 3 12 29.4		1 4.31	10 19.86	

* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
		Right Ascension.	Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
id.	1	10 41 36·26	N. 8 17 1·7	15 52·8	0 9·46	10 41 45·72
t.	2	10 45 14·04	7 55 8·7	15 53·0	0 28·23	10 45 42·27
n.	3	10 48 51·53	7 33 8·0	15 53·3	0 47·29	10 49 38·82
on.	4	10 52 28·74	7 11 0·2	15 53·5	1 6·63	10 53 35·37
tes.	5	10 56 5·70	6 48 45·3	15 53·8	1 26·22	10 57 31·92
ed.	6	10 59 42·42	6 26 23·8	15 54·0	1 46·06	11 1 28·48
ur.	7	11 3 18·91	6 3 56·0	15 54·3	2 6·13	11 5 25·04
id.	8	11 6 55·20	5 41 22·3	15 54·5	2 26·39	11 9 21·59
t.	9	11 10 31·30	5 18 43·0	15 54·8	2 46·85	11 13 18·15
n.	10	11 14 7·23	4 55 58·4	15 55·0	3 7·48	11 17 14·71
on.	11	11 17 43·02	4 33 8·9	15 55·3	3 28·25	11 21 11·27
tes.	12	11 21 18·67	4 10 14·7	15 55·5	3 49·16	11 25 7·83
ed.	13	11 24 54·23	3 47 16·2	15 55·8	4 10·15	11 29 4·38
ur.	14	11 28 29·70	3 24 13·8	15 56·1	4 31·23	11 33 0·93
id.	15	11 32 5·11	3 1 7·6	15 56·3	4 52·36	11 36 57·47
t.	16	11 35 40·49	2 37 57·9	15 56·6	5 13·53	11 40 54·02
n.	17	11 39 15·86	2 14 45·2	15 56·8	5 34·71	11 44 50·57
on.	18	11 42 51·26	1 51 29·5	15 57·1	5 55·86	11 48 47·12
tes.	19	11 46 26·70	1 28 11·4	15 57·4	6 16·98	11 52 43·68
ed.	20	11 50 2·19	1 4 51·1	15 57·6	6 38·05	11 56 40·24
ur.	21	11 53 37·76	0 41 28·9	15 57·9	6 59·04	12 0 36·80
id.	22	11 57 13·44	N. 0 18 5·2	15 58·2	7 19·91	12 4 33·35
t.	23	12 0 49·25	S. 0 5 19·9	15 58·4	7 40·66	12 8 29·91
n.	24	12 4 25·19	0 28 45·6	15 58·7	8 1·28	12 12 26·47
on.	25	12 8 1·30	0 52 11·9	15 59·0	8 21·72	12 16 23·02
tes.	26	12 11 37·58	1 15 38·3	15 59·3	8 42·00	12 20 19·58
ed.	27	12 15 14·06	1 39 4·5	15 59·5	9 2·07	12 24 16·13
ur.	28	12 18 50·76	2 2 30·1	15 59·8	9 21·92	12 28 12·68
id.	29	12 22 27·69	2 25 54·7	16 0·0	9 41·53	12 32 9·22
t.	30	12 26 4·87	2 49 18·0	16 0·3	10 0·90	12 36 5·77
n.	31	12 29 42·32	S. 3 12 39·5	16 0·6	10 20·00	12 40 2·32

* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	158° 47' 9" 3	N. 0° 53'	0.0036882	14° 49' 9"	14° 52' 4"	54' 25" 7	54' 3"
2	159 45 19 8	0 41	0.0035804	14 55 1	14 58 3	54 44 9	54 5
3	160 43 31 8	0 27	0.0034709	15 1 7	15 5 4	55 8 9	55 2
4	161 41 45 2	N. 0 13	0.0033601	15 9 6	15 13 9	55 37 8	55 3
5	162 40 0 3	0 00	0.0032477	15 18 7	15 23 9	56 11 5	56 3
6	163 38 16 9	S. 0 12	0.0031340	15 29 3	15 35 1	56 50 4	57 1
7	164 36 35 1	0 22	0.0030192	15 41 1	15 47 3	57 33 6	57 5
8	165 34 54 8	0 29	0.0029036	15 53 7	16 0 1	58 19 7	58 4
9	166 33 16 0	0 34	0.0027870	16 6 4	16 12 5	59 6 4	59 2
10	167 31 38 7	0 37	0.0026700	16 18 3	16 23 4	59 49 9	60
11	168 30 3 1	0 36	0.0025524	16 27 9	16 31 6	60 25 4	60 3
12	169 28 29 1	0 31	0.0024346	16 34 3	16 35 9	60 48 9	60 5
13	170 26 56 9	0 24	0.0023164	16 36 4	16 35 7	60 56 6	60 5
14	171 25 26 3	0 15	0.0021981	16 33 8	16 30 6	60 46 8	60 3
15	172 23 57 6	S. 0 04	0.0020797	16 26 4	16 21 3	60 19 9	60
16	173 22 30 9	N. 0 08	0.0019611	16 15 3	16 8 6	59 38 9	59 1
17	174 21 6 2	0 22	0.0018425	16 1 5	15 54 0	58 48 3	58 4
18	175 19 43 8	0 34	0.0017238	15 46 4	15 38 8	57 53 0	57 2
19	176 18 23 6	0 46	0.0016050	15 31 4	15 24 2	56 57 9	56 3
20	177 17 5 5	0 56	0.0014860	15 17 5	15 11 3	56 6 9	55 4
21	178 15 49 7	0 64	0.0013668	15 5 6	15 0 6	55 23 4	55
22	179 14 36 1	0 70	0.0012472	14 56 2	14 52 4	54 48 8	54 2
23	180 13 25 0	0 72	0.0011271	14 49 4	14 47 1	54 24 0	54
24	181 12 15 9	0 72	0.0010066	14 45 4	14 44 3	54 9 1	54
25	182 11 9 3	0 69	0.0008854	14 43 8	14 43 9	54 3 4	54
26	183 10 4 7	0 63	0.0007635	14 44 5	14 45 6	54 6 0	54
27	184 9 2 3	0 54	0.0006407	14 47 2	14 49 1	54 15 7	54 2
28	185 8 2 2	0 43	0.0005172	14 51 4	14 54 1	54 31 3	54
29	186 7 4 1	0 30	0.0003929	14 56 9	15 0 1	54 51 5	55
30	187 6 8 0	0 16	0.0002677	15 3 4	15 6 9	55 15 2	55 2
31	188 5 14 0	N. 0 02	0.0001420	15 10 5	15 14 3	55 41 4	55 5

MEAN TIME.

Day of the Week.	Day of the Month.	THE MOON'S							
		Longitude.		Latitude.		Age.	Meridian		
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.		
Frid.	1	173° 26' 44" 2	179° 28' 6" 7	N. 2° 32' 56" 4	N. 2° 3' 54" 6	1° 3'	0 59' 8"		
Sat.	2	185 31 10 8	191 36 12 2	1 33 19 4	N. 1 1 27 3	2 3'	1 39' 7"		
Sun.	3	197 43 28 7	203 53 19 8	N. 0 28 38 9	S. 0 4 46 2	3 3'	2 20 4		
Mon.	4	210 6 6 8	216 22 12 8	S. 0 38 25 4	1 11 56 8	4 3'	3 2 9		
Tues.	5	222 42 2 2	229 5 59 4	1 44 55 8	2 16 59 2	5 3'	3 48 5		
Wed.	6	235 34 29 7	242 7 56 6	2 47 40 6	3 16 34 1	6 3'	4 38 2		
Thur.	7	248 46 42 3	255 31 6 7	3 43 12 4	4 7 9 1	7 3'	5 32 8		
Frid.	8	262 21 24 3	269 17 45 1	4 27 56 1	4 45 7 7	8 3'	6 32 0		
Sat.	9	276 20 9 6	283 28 33 3	4 58 17 3	5 7 3 1	9 3'	7 34 4		
Sun.	10	290 42 38 9	298 2 1 2	5 11 4 0	5 10 6 1	10 3'	8 37 5		
Mon.	11	305 26 2 0	312 53 54 9	5 3 59 3	4 52 41 0	11 3'	9 38 7		
Tues.	12	320 24 41 1	327 57 17 2	4 36 16 5	4 15 0 5	12 3'	10 36 4		
Wed.	13	335 30 31 4	343 3 11 6	3 49 14 7	3 19 29 2	13 3'	11 30 6		
Thur.	14	350 34 4 9	358 2 3 0	2 46 21 3	2 10 32 1	14 3'	12 22 0		
Frid.	15	5 26 3 3	12 45 11 9	1 32 47 5	S. 0 53 52 9	15 3'	13 11 8		
Sat.	16	19 58 43 9	27 6 7 2	S. 0 14 33 5	N. 0 24 28 5	16 3'	14 1 2		
Sun.	17	34 6 59 1	41 1 8 6	N. 1 2 33 9	1 39 8 7	17 3'	14 51 2		
Mon.	18	47 48 32 7	54 29 19 1	2 13 43 8	2 45 55 4	18 3'	15 42 6		
Tues.	19	61 3 41 8	67 32 0 7	3 15 23 9	3 41 53 9	19 3'	16 35 4		
Wed.	20	73 54 40 7	80 12 11 4	4 5 14 8	4 25 17 8	20 3'	17 29 1		
Thur.	21	86 25 3 9	92 33 50 8	4 41 58 4	4 55 12 5	21 3'	18 22 7		
Frid.	22	98 39 5 6	104 41 23 1	5 4 58 9	5 11 17 2	22 3'	19 14 8		
Sat.	23	110 41 16 0	116 39 18 0	5 14 8 4	5 13 34 8	23 3'	20 4 6		
Sun.	24	122 35 59 1	128 31 49 6	5 9 39 1	5 2 24 6	24 3'	20 51 6		
Mon.	25	134 27 17 9	140 22 48 8	4 51 57 1	4 38 21 8	25 3'	21 35 9		
Tues.	26	146 18 46 3	152 15 33 1	4 21 45 7	4 2 17 3	26 3'	22 18 0		
Wed.	27	158 13 27 0	164 12 46 8	3 40 6 6	3 15 24 8	27 3'	22 58 7		
Thur.	28	170 13 47 3	176 16 42 6	2 48 24 7	2 19 21 6	28 3'	23 38 8		
Frid.	29	182 21 44 7	188 29 5 1	1 48 32 2	1 16 14 9	29 3'	0		
Sat.	30	194 38 52 3	200 51 16 9	N. 0 42 49 6	N. 0 8 38 9	0 7'	0 19 5		
Sun.	31	207 6 26 8	213 24 31 5	S. 0 25 54 3	S. 1 0 25 7	1 7'	1 1 7		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. for
FRIDAY 1.				SUNDAY 3.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	
0	11 39 59.08	N. 4 56 42.0	140.83	0	13 6 5.79	S. 6 31 15.5	142
1	11 41 45.95	4 42 37.0	141.07	1	13 7 55.90	6 45 31.6	142
2	11 43 32.79	4 28 30.6	141.30	2	13 9 46.18	6 59 46.7	142
3	11 45 19.61	4 14 22.8	141.50	3	13 11 36.64	7 14 0.8	142
4	11 47 6.40	4 0 13.8	141.70	4	13 13 27.28	7 28 13.7	141
5	11 48 53.18	3 46 3.6	141.90	5	13 15 18.11	7 42 25.4	141
6	11 50 39.94	3 31 52.2	142.10	6	13 17 9.13	7 56 35.9	141
7	11 52 26.69	3 17 39.6	142.28	7	13 19 0.35	8 10 45.1	141
8	11 54 13.43	3 3 25.9	142.45	8	13 20 51.77	8 24 53.0	141
9	11 56 0.17	2 49 11.2	142.60	9	13 22 43.40	8 38 59.4	141
10	11 57 46.92	2 34 55.6	142.78	10	13 24 35.24	8 53 4.3	141
11	11 59 33.67	2 20 38.9	142.92	11	13 26 27.29	9 7 7.8	141
12	12 1 20.42	2 6 21.4	143.05	12	13 28 19.56	9 21 9.6	141
13	12 3 7.20	1 52 3.1	143.20	13	13 30 12.06	9 35 9.8	141
14	12 4 53.99	1 37 43.9	143.30	14	13 32 4.78	9 49 8.2	141
15	12 6 40.81	1 23 24.1	143.43	15	13 33 57.74	10 3 4.9	141
16	12 8 27.65	1 9 3.5	143.53	16	13 35 50.94	10 16 59.8	141
17	12 10 14.52	0 54 42.3	143.65	17	13 37 44.37	10 30 52.8	141
18	12 12 1.43	0 40 20.4	143.73	18	13 39 38.06	10 44 43.8	141
19	12 13 48.38	0 25 58.0	143.82	19	13 41 32.00	10 58 32.9	141
20	12 15 35.37	N. 0 11 35.1	143.90	20	13 43 26.19	11 12 19.8	141
21	12 17 22.40	S. 0 2 48.3	143.97	21	13 45 20.65	11 26 4.7	141
22	12 19 9.49	0 17 12.1	144.03	22	13 47 15.37	11 39 47.3	141
23	12 20 56.63	S. 0 31 36.3	144.08	23	13 49 10.36	S. 11 53 27.7	141
SATURDAY 2.				MONDAY 4.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	
0	12 22 43.83	S. 0 46 0.8	144.13	0	13 51 5.62	S. 12 7 5.8	141
1	12 24 31.09	1 0 25.6	144.18	1	13 53 1.16	12 20 41.5	141
2	12 26 18.43	1 14 50.7	144.20	2	13 54 56.99	12 34 14.8	141
3	12 28 5.83	1 29 15.9	144.22	3	13 56 53.10	12 47 45.6	141
4	12 29 53.32	1 43 41.2	144.23	4	13 58 49.51	13 1 13.8	141
5	12 31 40.88	1 58 6.6	144.25	5	14 0 46.21	13 14 39.3	141
6	12 33 28.53	2 12 32.1	144.23	6	14 2 43.21	13 28 2.2	141
7	12 35 16.27	2 26 57.5	144.22	7	14 4 40.52	13 41 22.3	141
8	12 37 4.10	2 41 22.8	144.20	8	14 6 38.15	13 54 39.5	141
9	12 38 52.03	2 55 48.0	144.18	9	14 8 36.08	14 7 53.8	141
10	12 40 40.06	3 10 13.1	144.13	10	14 10 34.34	14 21 5.1	141
11	12 42 28.20	3 24 37.9	144.08	11	14 12 32.92	14 34 13.4	141
12	12 44 16.45	3 39 2.4	144.03	12	14 14 31.83	14 47 18.5	141
13	12 46 4.82	3 53 26.6	143.95	13	14 16 31.07	15 0 20.4	141
14	12 47 53.31	4 7 50.3	143.90	14	14 18 30.65	15 13 19.1	141
15	12 49 41.92	4 22 13.7	143.80	15	14 20 30.57	15 26 14.4	141
16	12 51 30.66	4 36 36.5	143.72	16	14 22 30.83	15 39 6.3	141
17	12 53 19.54	4 50 58.8	143.62	17	14 24 31.44	15 51 54.7	141
18	12 55 8.55	5 5 20.5	143.52	18	14 26 32.41	16 4 39.6	141
19	12 56 57.71	5 19 41.6	143.40	19	14 28 33.74	16 17 20.9	141
20	12 58 47.01	5 34 2.0	143.27	20	14 30 35.42	16 29 58.4	141
21	13 0 36.47	5 48 21.6	143.13	21	14 32 37.47	16 42 32.2	141
22	13 2 26.08	6 2 40.4	143.00	22	14 34 39.89	16 55 2.2	141
23	13 4 15.85	6 16 58.4	142.85	23	14 36 42.69	17 7 28.2	141
24	13 6 5.79	S. 6 31 15.5		24	14 38 45.86	S. 17 19 50.2	141

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
TUESDAY 5.				THURSDAY 7.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	14 38 45.86	S. 17 19 50.2	123.00	0	16 25 40.23	S. 25 27 38.3	73.47
1	14 40 49.41	17 32 8.2	122.30	1	16 28 5.00	25 34 59.1	72.07
2	14 42 53.35	17 44 22.0	121.60	2	16 30 30.21	25 42 11.5	70.63
3	14 44 57.67	17 56 31.6	120.87	3	16 32 55.88	25 49 15.3	69.20
4	14 47 2.39	18 8 36.8	120.15	4	16 35 22.00	25 56 10.5	67.75
5	14 49 7.51	18 20 37.7	119.40	5	16 37 48.56	26 2 57.0	66.27
6	14 51 13.02	18 32 34.1	118.65	6	16 40 15.57	26 9 34.6	64.80
7	14 53 18.93	18 44 26.0	117.87	7	16 42 43.01	26 16 3.4	63.28
8	14 55 25.26	18 56 13.2	117.08	8	16 45 10.89	26 22 23.1	61.77
9	14 57 31.99	19 7 55.7	116.28	9	16 47 39.21	26 28 33.7	60.23
10	14 59 39.14	19 19 33.4	115.47	10	16 50 7.95	26 34 35.1	58.68
11	15 1 46.71	19 31 6.2	114.63	11	16 52 37.12	26 40 27.2	57.13
12	15 3 54.69	19 42 34.0	113.80	12	16 55 6.70	26 46 10.0	55.55
13	15 6 3.10	19 53 56.8	112.93	13	16 57 36.71	26 51 43.3	53.95
14	15 8 11.93	20 5 14.4	112.07	14	17 0 7.12	26 57 7.0	52.35
15	15 10 21.20	20 16 26.8	111.18	15	17 2 37.95	27 2 21.1	50.72
16	15 12 30.90	20 27 33.9	110.28	16	17 5 9.17	27 7 25.4	49.08
17	15 14 41.03	20 38 35.6	109.37	17	17 7 40.80	27 12 19.9	47.45
18	15 16 51.60	20 49 31.8	108.45	18	17 10 12.81	27 17 4.6	45.77
19	15 19 2.60	21 0 22.5	107.48	19	17 12 45.22	27 21 39.2	44.10
20	15 21 14.06	21 11 7.4	106.55	20	17 15 18.00	27 26 3.8	42.42
21	15 23 25.95	21 21 46.7	105.57	21	17 17 51.16	27 30 18.3	40.70
22	15 25 38.29	21 32 20.1	104.57	22	17 20 24.68	27 34 22.5	38.98
23	15 27 51.08	S. 21 42 47.5	103.58	23	17 22 58.57	S. 27 38 16.4	37.27
WEDNESDAY 6.				FRIDAY 8.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	15 30 4.32	S. 21 53 9.0	102.57	0	17 25 32.81	S. 27 42 0.0	35.52
1	15 32 18.01	22 3 24.4	101.52	1	17 28 7.41	27 45 33.1	33.77
2	15 34 32.16	22 13 33.5	100.48	2	17 30 42.35	27 48 55.7	32.00
3	15 36 46.77	22 23 36.4	99.42	3	17 33 17.62	27 52 7.7	30.23
4	15 39 1.83	22 33 32.9	98.33	4	17 35 53.23	27 55 9.1	28.42
5	15 41 17.35	22 43 22.9	97.25	5	17 38 29.15	27 57 59.6	26.63
6	15 43 33.33	22 53 6.4	96.12	6	17 41 5.38	28 0 39.4	24.80
7	15 45 49.77	23 2 43.1	95.02	7	17 43 41.92	28 3 8.2	22.98
8	15 48 6.67	23 12 13.2	93.87	8	17 46 18.75	28 5 26.1	21.15
9	15 50 24.04	23 21 36.4	92.70	9	17 48 55.88	28 7 33.0	19.30
10	15 52 41.87	23 30 52.6	91.53	10	17 51 33.28	28 9 28.8	17.45
11	15 55 0.17	23 40 1.8	90.35	11	17 54 10.95	28 11 13.5	15.58
12	15 57 18.92	23 49 3.9	89.15	12	17 56 48.88	28 12 47.0	13.70
13	15 59 38.15	23 57 58.8	87.92	13	17 59 27.07	28 14 9.2	11.80
14	16 1 57.84	24 6 46.3	86.68	14	18 2 5.50	28 15 20.0	9.92
15	16 4 18.00	24 15 26.4	85.43	15	18 4 44.16	28 16 19.5	8.02
16	16 6 38.62	24 23 59.0	84.17	16	18 7 23.05	28 17 7.6	6.10
17	16 8 59.71	24 32 24.0	82.88	17	18 10 2.16	28 17 44.2	4.18
18	16 11 21.26	24 40 41.3	81.58	18	18 12 41.48	28 18 9.3	2.25
19	16 13 43.27	24 48 50.8	80.28	19	18 15 20.99	28 18 22.8	0.33
20	16 16 5.74	24 56 52.5	78.93	20	18 18 0.69	28 18 24.8	1.62
21	16 18 28.68	25 4 46.1	77.60	21	18 20 40.56	28 18 15.1	3.57
22	16 20 52.07	25 12 31.7	76.23	22	18 23 20.61	28 17 53.7	5.52
23	16 23 15.92	25 20 9.1	74.87	23	18 26 0.81	28 17 20.6	7.47
24	16 25 40.23	S. 25 27 38.3	-	24	18 28 41.17	S. 28 16 35.8	-

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
SATURDAY 9.				MONDAY 11.			
0	18 28 41.17	S. 28 16 35.8	9.43	0	20 36 36.10	S. 23 50 17.0	10.10
1	18 31 21.67	28 15 39.2	11.38	1	20 39 11.85	23 40 9.0	10.10
2	18 34 2.30	28 14 30.9	13.37	2	20 41 47.30	23 29 59.9	10.10
3	18 36 43.04	28 13 10.7	15.35	3	20 44 22.47	23 19 22.6	10.10
4	18 39 23.89	28 11 38.6	17.32	4	20 46 57.33	23 8 44.4	10.10
5	18 42 4.84	28 9 54.7	19.30	5	20 49 31.89	22 57 56.2	10.10
6	18 44 45.88	28 7 58.9	21.28	6	20 52 6.15	22 46 58.3	11.10
7	18 47 26.99	28 5 51.2	23.28	7	20 54 40.10	22 35 50.6	11.10
8	18 50 8.17	28 3 31.5	25.27	8	20 57 13.73	22 24 33.3	11.10
9	18 52 49.41	28 0 59.9	27.25	9	20 59 47.04	22 13 6.5	11.10
10	18 55 30.69	27 58 16.4	29.25	10	21 2 20.03	22 1 30.3	11.10
11	18 58 12.00	27 55 20.9	31.23	11	21 4 52.69	21 49 44.8	11.10
12	19 0 53.33	27 52 13.5	33.23	12	21 7 25.03	21 37 50.0	11.10
13	19 3 34.68	27 48 54.1	35.23	13	21 9 57.03	21 25 46.2	11.10
14	19 6 16.03	27 45 22.7	37.22	14	21 12 28.70	21 13 33.4	11.10
15	19 8 57.37	27 41 39.4	39.22	15	21 15 0.04	21 1 11.7	11.10
16	19 11 38.69	27 37 44.1	41.20	16	21 17 31.03	20 48 41.2	11.10
17	19 14 19.99	27 33 36.9	43.18	17	21 20 1.69	20 36 2.1	11.10
18	19 17 1.25	27 29 17.8	45.17	18	21 22 32.01	20 23 14.4	11.10
19	19 19 42.46	27 24 46.8	47.15	19	21 25 1.99	20 10 18.3	11.10
20	19 22 23.62	27 20 3.9	49.12	20	21 27 31.62	19 57 13.9	11.10
21	19 25 4.71	27 15 9.2	51.10	21	21 30 0.91	19 44 1.2	11.10
22	19 27 45.72	27 10 2.6	53.05	22	21 32 29.85	19 30 40.5	11.10
23	19 30 26.65	S. 27 4 44.3	55.03	23	21 34 58.45	S. 19 17 11.8	11.10
SUNDAY 10.				TUESDAY 12.			
0	19 33 7.48	S. 26 59 14.1	56.98	0	21 37 26.70	S. 19 3 35.3	11.10
1	19 35 48.21	26 53 32.2	58.93	1	21 39 54.61	18 49 51.0	11.10
2	19 38 28.82	26 47 38.6	60.87	2	21 42 22.17	18 35 59.2	11.10
3	19 41 9.30	26 41 33.4	62.82	3	21 44 49.39	18 21 59.8	11.10
4	19 43 49.65	26 35 16.5	64.75	4	21 47 16.26	18 7 53.1	11.10
5	19 46 29.86	26 28 48.0	66.67	5	21 49 42.78	17 53 39.1	11.10
6	19 49 9.92	26 22 8.0	68.58	6	21 52 8.96	17 39 18.0	11.10
7	19 51 49.82	26 15 16.5	70.50	7	21 54 34.80	17 24 49.9	11.10
8	19 54 29.56	26 8 13.5	72.40	8	21 57 0.29	17 10 14.9	11.10
9	19 57 9.11	26 0 59.1	74.28	9	21 59 25.44	16 55 33.2	11.10
10	19 59 48.48	25 53 33.4	76.17	10	22 1 50.25	16 40 44.8	11.10
11	20 2 27.66	25 45 56.4	78.05	11	22 4 14.71	16 25 49.9	11.10
12	20 5 6.64	25 38 8.1	79.90	12	22 6 38.85	16 10 48.7	11.10
13	20 7 45.40	25 30 8.7	81.77	13	22 9 2.64	15 55 41.2	11.10
14	20 10 23.95	25 21 58.1	83.60	14	22 11 26.09	15 40 27.6	11.10
15	20 13 2.28	25 13 36.5	85.43	15	22 13 49.21	15 25 8.1	11.10
16	20 15 40.38	25 5 3.9	87.25	16	22 16 12.00	15 9 42.6	11.10
17	20 18 18.24	24 56 20.4	89.05	17	22 18 34.46	14 54 11.4	11.10
18	20 20 55.86	24 47 26.1	90.83	18	22 20 56.59	14 38 34.6	11.10
19	20 23 33.22	24 38 21.1	92.63	19	22 23 18.39	14 22 52.4	11.10
20	20 26 10.33	24 29 5.3	94.40	20	22 25 39.88	14 7 4.7	11.10
21	20 28 47.18	24 19 38.9	96.13	21	22 28 1.04	13 51 11.9	11.10
22	20 31 23.76	24 10 2.1	97.90	22	22 30 21.89	13 35 13.9	11.10
23	20 34 0.07	24 0 14.7	99.62	23	22 32 42.42	13 19 11.0	11.10
24	20 36 36.10	S. 23 50 17.0		24	22 35 2.64	S. 13 3 3.2	11.10

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 13.				FRIDAY 15.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	22 35 2.64	S. 13 3 3.2	162.08	0	0 22 24.17	N. 0 44 28.3	175.18
1	22 37 22.55	12 46 50.7	162.85	1	0 24 34.18	1 1 59.4	174.97
2	22 39 42.17	12 30 33.6	163.58	2	0 26 44.10	1 19 29.2	174.75
3	22 42 1.48	12 14 12.1	164.30	3	0 28 53.93	1 36 57.7	174.50
4	22 44 20.49	11 57 46.3	165.00	4	0 31 3.68	1 54 24.7	174.25
5	22 46 39.20	11 41 16.3	165.68	5	0 33 13.35	2 11 50.2	173.95
6	22 48 57.63	11 24 42.2	166.33	6	0 35 22.95	2 29 13.9	173.67
7	22 51 15.77	11 8 4.2	166.98	7	0 37 32.48	2 46 35.9	173.35
8	22 53 33.62	10 51 22.3	167.58	8	0 39 41.95	3 3 56.0	173.02
9	22 55 51.20	10 34 36.8	168.17	9	0 41 51.36	3 21 14.1	172.68
10	22 58 8.49	10 17 47.8	168.75	10	0 44 0.71	3 38 30.2	172.30
11	23 0 25.52	10 0 55.3	169.28	11	0 46 10.01	3 55 44.0	171.92
12	23 2 42.27	9 43 59.6	169.82	12	0 48 19.28	4 12 55.5	171.52
13	23 4 58.76	9 27 0.7	170.32	13	0 50 28.50	4 30 4.6	171.10
14	23 7 15.00	9 9 58.8	170.80	14	0 52 37.68	4 47 11.2	170.67
15	23 9 30.97	8 52 54.0	171.27	15	0 54 46.84	5 4 15.2	170.22
16	23 11 46.70	8 35 46.4	171.70	16	0 56 55.97	5 21 16.5	169.77
17	23 14 2.17	8 18 36.2	172.13	17	0 59 5.07	5 38 15.1	169.27
18	23 16 17.41	8 1 23.4	172.53	18	1 1 14.16	5 55 10.7	168.77
19	23 18 32.40	7 44 8.2	172.92	19	1 3 23.23	6 12 3.3	168.27
20	23 20 47.16	7 26 50.7	173.27	20	1 5 32.30	6 28 52.9	167.73
21	23 23 1.69	7 9 31.1	173.60	21	1 7 41.36	6 45 39.3	167.18
22	23 25 16.00	6 52 9.5	173.92	22	1 9 50.42	7 2 22.4	166.63
23	23 27 30.08	S. 6 34 46.0	174.23	23	1 11 59.48	N. 7 19 2.2	166.05
THURSDAY 14.				SATURDAY 16.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	23 29 43.94	S. 6 17 20.6	174.50	0	1 14 8.55	N. 7 35 38.5	165.47
1	23 31 57.60	5 59 53.6	174.77	1	1 16 17.64	7 52 11.3	164.85
2	23 34 11.04	5 42 25.0	174.98	2	1 18 26.74	8 8 40.4	164.25
3	23 36 24.29	5 24 55.1	175.22	3	1 20 35.87	8 25 5.9	163.60
4	23 38 37.34	5 7 23.8	175.40	4	1 22 45.02	8 41 27.5	162.95
5	23 40 50.19	4 49 51.4	175.58	5	1 24 54.20	8 57 45.2	162.28
6	23 43 2.86	4 32 17.9	175.72	6	1 27 3.41	9 13 58.9	161.60
7	23 45 15.35	4 14 43.6	175.87	7	1 29 12.66	9 30 8.5	160.92
8	23 47 27.65	3 57 8.4	175.98	8	1 31 21.95	9 46 14.0	160.20
9	23 49 39.78	3 39 32.5	176.08	9	1 33 31.29	10 2 15.2	159.47
10	23 51 51.74	3 21 56.0	176.15	10	1 35 40.67	10 18 12.0	158.75
11	23 54 3.54	3 4 19.1	176.20	11	1 37 50.10	10 34 4.5	157.98
12	23 56 15.18	2 46 41.9	176.23	12	1 39 59.59	10 49 52.4	157.22
13	23 58 26.66	2 29 4.5	176.25	13	1 42 9.14	11 5 35.7	156.43
14	0 0 37.99	2 11 27.0	176.25	14	1 44 18.75	11 21 14.3	155.65
15	0 2 49.18	1 53 49.5	176.23	15	1 46 28.42	11 36 48.2	154.83
16	0 5 0.23	1 36 12.1	176.18	16	1 48 38.16	11 52 17.2	154.02
17	0 7 11.15	1 18 35.0	176.12	17	1 50 47.98	12 7 41.3	153.20
18	0 9 21.93	1 0 58.3	176.05	18	1 52 57.87	12 23 0.5	152.33
19	0 11 32.59	0 43 22.0	175.95	19	1 55 7.84	12 38 14.5	151.48
20	0 13 43.12	0 25 46.3	175.83	20	1 57 17.90	12 53 23.4	150.60
21	0 15 53.54	S. 0 8 11.3	175.68	21	1 59 28.04	13 8 27.0	149.72
22	0 18 3.85	N. 0 9 22.8	175.55	22	2 1 38.26	13 23 25.3	148.83
23	0 20 14.06	0 26 56.1	175.37	23	2 3 48.58	13 38 18.3	147.92
24	0 22 24.17	N. 0 44 28.3		24	2 5 59.00	N. 13 53 5.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 17.				TUESDAY 19.			
0	2 5 59.00	N.13 53 5.8	147.00	0	3 52 45.84	N.23 34 39.3	90
1	2 8 9.51	14 7 47.8	146.05	1	3 55 2.67	23 43 42.7	81
2	2 10 20.13	14 22 24.1	145.12	2	3 57 19.62	23 52 37.9	87
3	2 12 30.84	14 36 54.8	144.17	3	3 59 36.70	24 1 24.8	88
4	2 14 41.66	14 51 19.8	143.18	4	4 1 53.91	24 10 3.3	88
5	2 16 52.59	15 5 38.9	142.20	5	4 4 11.23	24 18 33.5	88
6	2 19 3.63	15 19 52.1	141.22	6	4 6 28.68	24 26 55.3	88
7	2 21 14.78	15 33 59.4	140.20	7	4 8 46.24	24 35 8.6	88
8	2 23 26.04	15 48 0.6	139.18	8	4 11 3.92	24 43 13.5	87
9	2 25 37.42	16 1 55.7	138.17	9	4 13 21.71	24 51 9.9	87
10	2 27 48.92	16 15 44.7	137.12	10	4 15 39.61	24 58 57.7	87
11	2 30 0.54	16 29 27.4	136.07	11	4 17 57.62	25 6 37.1	87
12	2 32 12.28	16 43 3.8	135.00	12	4 20 15.73	25 14 7.8	87
13	2 34 24.15	16 56 33.8	133.93	13	4 22 33.95	25 21 30.0	87
14	2 36 36.14	17 9 57.4	132.85	14	4 24 52.26	25 28 43.5	87
15	2 38 48.26	17 23 14.5	131.77	15	4 27 10.67	25 35 48.3	87
16	2 41 0.50	17 36 25.1	130.65	16	4 29 29.17	25 42 44.5	87
17	2 43 12.88	17 49 29.0	129.53	17	4 31 47.77	25 49 32.0	87
18	2 45 25.39	18 2 26.2	128.42	18	4 34 6.45	25 56 10.7	87
19	2 47 38.04	18 15 16.7	127.28	19	4 36 25.21	26 2 40.7	87
20	2 49 50.82	18 28 0.4	126.13	20	4 38 44.05	26 9 2.0	87
21	2 52 3.74	18 40 37.2	124.98	21	4 41 2.97	26 15 14.4	87
22	2 54 16.79	18 53 7.1	123.82	22	4 43 21.97	26 21 18.0	87
23	2 56 29.99	N.19 5 30.0	122.65	23	4 45 41.03	N.26 27 12.8	87
MONDAY 18.				WEDNESDAY 20.			
0	2 58 43.32	N.19 17 45.9	121.47	0	4 48 0.16	N.26 32 58.8	87
1	3 0 56.80	19 29 54.7	120.27	1	4 50 19.36	26 38 35.9	87
2	3 3 10.41	19 41 56.3	119.07	2	4 52 38.61	26 44 4.1	87
3	3 5 24.17	19 53 50.7	117.87	3	4 54 57.92	26 49 23.4	87
4	3 7 38.08	20 5 37.9	116.65	4	4 57 17.28	26 54 33.8	87
5	3 9 52.12	20 17 17.8	115.40	5	4 59 36.68	26 59 35.3	87
6	3 12 6.31	20 28 50.2	114.18	6	5 1 56.13	27 4 27.9	87
7	3 14 20.64	20 40 15.3	112.93	7	5 4 15.62	27 9 11.6	87
8	3 16 35.11	20 51 32.9	111.68	8	5 6 35.14	27 13 46.3	87
9	3 18 49.73	21 2 43.0	110.42	9	5 8 54.69	27 18 12.1	87
10	3 21 4.49	21 13 45.5	109.15	10	5 11 14.26	27 22 28.9	87
11	3 23 19.39	21 24 40.4	107.87	11	5 13 33.86	27 26 36.8	87
12	3 25 34.43	21 35 27.6	106.58	12	5 15 53.46	27 30 35.7	87
13	3 27 49.62	21 46 7.1	105.28	13	5 18 13.08	27 34 25.7	87
14	3 30 4.95	21 56 38.8	103.98	14	5 20 32.71	27 38 6.7	87
15	3 32 20.42	22 7 2.7	102.68	15	5 22 52.34	27 41 38.7	87
16	3 34 36.02	22 17 18.8	101.37	16	5 25 11.97	27 45 1.8	87
17	3 36 51.77	22 27 27.0	100.03	17	5 27 31.60	27 48 15.9	87
18	3 39 7.66	22 37 27.2	98.70	18	5 29 51.21	27 51 21.0	87
19	3 41 23.69	22 47 19.4	97.37	19	5 32 10.81	27 54 17.1	87
20	3 43 39.85	22 57 3.6	96.02	20	5 34 30.38	27 57 4.3	87
21	3 45 56.12	23 6 39.7	94.67	21	5 36 49.93	27 59 42.5	87
22	3 48	7.7	93.32	22	5 39 9.45	28 2 11.8	87
23	3 51		91.95	23	5 41 28.93	28 4 32.1	87
24	3 54			24	5 43 48.42	N.28 6 43.5	87

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 21.				SATURDAY 23.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	5 43 48.37	N.28 6 43.5	20.40	0	7 33 3.56	N.27 2 29.3	46.72
1	5 46 7.77	28 8 45.9	18.92	1	7 35 15.58	26 57 49.0	47.98
2	5 48 27.12	28 10 39.4	17.43	2	7 37 27.35	26 53 1.1	49.23
3	5 50 46.41	28 12 24.0	15.93	3	7 39 38.89	26 48 5.7	50.48
4	5 53 5.65	28 13 59.6	14.47	4	7 41 50.18	26 43 2.8	51.72
5	5 55 24.82	28 15 26.4	12.97	5	7 44 1.22	26 37 52.5	52.93
6	5 57 43.92	28 16 44.2	11.50	6	7 46 12.01	26 32 34.9	54.17
7	6 0 2.94	28 17 53.2	10.03	7	7 48 22.55	26 27 9.9	55.38
8	6 2 21.89	28 18 53.4	8.55	8	7 50 32.83	26 21 37.6	56.58
9	6 4 40.76	28 19 44.7	7.08	9	7 52 42.86	26 15 58.1	57.78
10	6 6 59.53	28 20 27.2	5.62	10	7 54 52.63	26 10 11.4	58.98
11	6 9 18.21	28 21 0.9	4.15	11	7 57 2.15	26 4 17.5	60.15
12	6 11 36.79	28 21 25.8	2.68	12	7 59 11.40	25 58 16.6	61.33
13	6 13 55.27	28 21 41.9	1.23	13	8 1 20.39	25 52 8.6	62.50
14	6 16 13.64	28 21 49.3	0.22	14	8 3 29.12	25 45 53.6	63.65
15	6 18 31.90	28 21 48.0	1.67	15	8 5 37.58	25 39 31.7	64.82
16	6 20 50.04	28 21 38.0	3.12	16	8 7 45.78	25 33 2.8	65.97
17	6 23 8.06	28 21 19.3	4.57	17	8 9 53.71	25 26 27.0	67.08
18	6 25 25.96	28 20 51.9	6.00	18	8 12 1.38	25 19 44.5	68.22
19	6 27 43.72	28 20 15.9	7.43	19	8 14 8.77	25 12 55.2	69.35
20	6 30 1.35	28 19 31.3	8.87	20	8 16 15.90	25 5 59.1	70.45
21	6 32 18.83	28 18 38.1	10.30	21	8 18 22.76	24 58 56.4	71.57
22	6 34 36.18	28 17 36.3	11.72	22	8 20 29.35	24 51 47.0	72.65
23	6 36 53.37	N.28 16 26.0	13.13	23	8 22 35.66	N.24 44 31.1	73.75
FRIDAY 22.				SUNDAY 24.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	6 39 10.42	N.28 15 7.2	14.55	0	8 24 41.71	N.24 37 8.6	74.83
1	6 41 27.31	28 13 39.9	15.95	1	8 26 47.49	24 29 39.6	75.90
2	6 43 44.04	28 12 4.2	17.37	2	8 28 52.99	24 22 4.2	76.95
3	6 46 0.60	28 10 20.0	18.75	3	8 30 58.22	24 14 22.5	78.02
4	6 48 17.00	28 8 27.5	20.15	4	8 33 3.19	24 6 34.4	79.07
5	6 50 33.22	28 6 26.6	21.53	5	8 35 7.88	23 58 40.0	80.12
6	6 52 49.26	28 4 17.4	22.92	6	8 37 12.30	23 50 39.3	81.13
7	6 55 5.12	28 1 59.9	24.28	7	8 39 16.45	23 42 32.5	82.15
8	6 57 20.80	27 59 34.2	25.67	8	8 41 20.32	23 34 19.6	83.17
9	6 59 36.29	27 57 0.2	27.03	9	8 43 23.93	23 26 0.6	84.18
10	7 1 51.58	27 54 18.0	28.38	10	8 45 27.27	23 17 35.5	85.17
11	7 4 6.68	27 51 27.7	29.73	11	8 47 30.34	23 9 4.5	86.17
12	7 6 21.57	27 48 29.3	31.08	12	8 49 33.13	23 0 27.5	87.13
13	7 8 36.26	27 45 22.8	32.42	13	8 51 35.66	22 51 44.7	88.12
14	7 10 50.75	27 42 8.3	33.77	14	8 53 37.92	22 42 56.0	89.08
15	7 13 5.03	27 38 45.7	35.08	15	8 55 39.92	22 34 1.5	90.02
16	7 15 19.09	27 35 15.2	36.40	16	8 57 41.65	22 25 1.4	90.98
17	7 17 32.94	27 31 36.8	37.72	17	8 59 43.11	22 15 55.5	91.92
18	7 19 46.56	27 27 50.5	39.03	18	9 1 44.31	22 6 44.0	92.85
19	7 21 59.97	27 23 56.3	40.32	19	9 3 45.25	21 57 26.9	93.77
20	7 24 13.15	27 19 54.4	41.63	20	9 5 45.92	21 48 4.3	94.68
21	7 26 26.10	27 15 44.6	42.90	21	9 7 46.33	21 38 36.2	95.58
22	7 28 38.82	27 11 27.2	44.18	22	9 9 46.48	21 29 2.7	96.50
23	7 30 51.31	27 7 2.1	45.47	23	9 11 46.38	21 19 23.7	97.37
24	7 33 3.56	N.27 2 29.3		24	9 13 46.01	N.21 9 39.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 25.				WEDNESDAY 27.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	9 13 46.01	N. 21 9 39.5	98.25	0	10 45 6.06	N. 11 53 37.4	11
1	9 15 45.39	20 59 50.0	99.13	1	10 46 55.83	11 40 31.2	11
2	9 17 44.51	20 49 55.2	100.00	2	10 48 45.48	11 27 22.1	11
3	9 19 43.38	20 39 55.2	100.85	3	10 50 35.00	11 14 10.1	11
4	9 21 41.99	20 29 50.1	101.70	4	10 52 24.39	11 0 55.3	11
5	9 23 40.36	20 19 39.9	102.53	5	10 54 13.67	10 47 37.6	11
6	9 25 38.48	20 9 24.7	103.37	6	10 56 2.84	10 34 17.2	11
7	9 27 36.36	19 59 4.5	104.20	7	10 57 51.89	10 20 54.2	11
8	9 29 33.99	19 48 39.3	105.02	8	10 59 40.84	10 7 28.4	11
9	9 31 31.37	19 38 9.2	105.82	9	11 1 29.68	9 54 0.1	11
10	9 33 28.52	19 27 34.3	106.62	10	11 3 18.42	9 40 29.2	11
11	9 35 25.43	19 16 54.6	107.40	11	11 5 7.07	9 26 55.8	11
12	9 37 22.10	19 6 10.2	108.18	12	11 6 55.62	9 13 19.9	11
13	9 39 18.54	18 55 21.1	108.97	13	11 8 44.08	8 59 41.6	11
14	9 41 14.75	18 44 27.3	109.73	14	11 10 32.46	8 46 0.9	11
15	9 43 10.72	18 33 28.9	110.50	15	11 12 20.75	8 32 17.9	11
16	9 45 6.47	18 22 25.9	111.23	16	11 14 8.96	8 18 32.7	11
17	9 47 2.00	18 11 18.5	111.98	17	11 15 57.10	8 4 45.2	11
18	9 48 57.30	18 0 6.6	112.72	18	11 17 45.17	7 50 55.5	11
19	9 50 52.38	17 48 50.3	113.45	19	11 19 33.16	7 37 3.7	11
20	9 52 47.24	17 37 29.6	114.15	20	11 21 21.10	7 23 9.8	11
21	9 54 41.89	17 26 4.7	114.87	21	11 23 8.97	7 9 13.9	11
22	9 56 36.33	17 14 35.5	115.58	22	11 24 56.79	6 55 15.9	11
23	9 58 30.55	N. 17 3 2.0	116.27	23	11 26 44.55	N. 6 41 16.1	11
TUESDAY 26.				THURSDAY 28.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	10 0 24.56	N. 16 51 24.4	116.95	0	11 28 32.27	N. 6 27 14.3	11
1	10 2 18.37	16 39 42.7	117.63	1	11 30 19.94	6 13 10.7	11
2	10 4 11.99	16 27 56.9	118.30	2	11 32 7.57	5 59 5.3	11
3	10 6 5.40	16 16 7.1	118.97	3	11 33 55.17	5 44 58.1	11
4	10 7 58.61	16 4 13.3	119.62	4	11 35 42.72	5 30 49.3	11
5	10 9 51.64	15 52 15.6	120.27	5	11 37 30.25	5 16 38.8	11
6	10 11 44.47	15 40 14.0	120.90	6	11 39 17.76	5 2 26.7	11
7	10 13 37.11	15 28 8.6	121.53	7	11 41 5.24	4 48 13.0	11
8	10 15 29.57	15 15 59.4	122.15	8	11 42 52.70	4 33 57.8	11
9	10 17 21.84	15 3 46.5	122.78	9	11 44 40.15	4 19 41.1	11
10	10 19 13.93	14 51 29.8	123.37	10	11 46 27.59	4 5 23.1	11
11	10 21 5.85	14 39 9.6	123.97	11	11 48 15.02	3 51 3.7	11
12	10 22 57.59	14 26 45.8	124.55	12	11 50 2.45	3 36 42.9	11
13	10 24 49.16	14 14 18.5	125.15	13	11 51 49.88	3 22 20.9	11
14	10 26 40.56	14 1 47.6	125.72	14	11 53 37.32	3 7 57.7	11
15	10 28 31.80	13 49 13.3	126.28	15	11 55 24.76	2 53 33.3	11
16	10 30 22.87	13 36 35.6	126.83	16	11 57 12.22	2 39 7.8	11
17	10 32 13.79	13 23 54.6	127.38	17	11 58 59.70	2 24 41.2	11
18	10 34 4.55	13 11 10.3	127.93	18	12 0 47.20	2 10 13.6	11
19	10 35 55.17	12 58 22.7	128.48	19	12 2 34.72	1 55 45.0	11
20	10 37 45.63	12 45 31.8	128.98	20	12 4 22.28	1 41 15.5	11
21	10 39 35.95	12 32 37.9	129.52	21	12 6 9.86	1 26 45.1	11
22	10 41 26.12	12 19 40.8	130.03	22	12 7 57.49	1 12 13.9	11
23	10 43 16.16	12 6 40.6	130.53	23	12 9 45.16	0 57 42.0	11
24	10 45 6.06	N. 11 53 37.4		24	12 11 32.87	N. 0 43 9.3	11

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 29.				SATURDAY 30.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	12 11 32.87	N. 0 43 9.3	145.55	0	12 55 2.47	S. 5 7 13.5	145.55
1	12 13 20.63	0 28 36.0	145.67	1	12 56 52.68	5 21 46.8	145.45
2	12 15 8.45	N. 0 14 2.0	145.75	2	12 58 43.04	5 36 19.5	145.32
3	12 16 56.33	S. 0 0 32.5	145.85	3	13 0 33.56	5 50 51.4	145.17
4	12 18 44.27	0 15 7.6	145.92	4	13 2 24.24	6 5 22.4	145.03
5	12 20 32.28	0 29 43.1	145.98	5	13 4 15.10	6 19 52.6	144.88
6	12 22 20.35	0 44 19.0	146.03	6	13 6 6.12	6 34 21.9	144.72
7	12 24 8.51	0 58 55.2	146.10	7	13 7 57.32	6 48 50.2	144.53
8	12 25 56.74	1 13 31.8	146.13	8	13 9 48.70	7 3 17.4	144.35
9	12 27 45.03	1 28 8.6	146.17	9	13 11 40.26	7 17 43.5	144.17
10	12 29 33.45	1 42 45.6	146.20	10	13 13 32.02	7 32 8.5	143.95
11	12 31 21.94	1 57 22.8	146.20	11	13 15 23.96	7 46 32.2	143.73
12	12 33 10.52	2 12 0.0	146.22	12	13 17 16.11	8 0 54.6	143.50
13	12 34 59.20	2 26 37.3	146.20	13	13 19 8.45	8 15 15.6	143.28
14	12 36 47.99	2 41 14.5	146.18	14	13 21 1.00	8 29 35.3	143.02
15	12 38 36.88	2 55 51.6	146.18	15	13 22 53.76	8 43 53.4	142.77
16	12 40 25.89	3 10 28.7	146.13	16	13 24 46.73	8 58 10.0	142.50
17	12 42 15.01	3 25 5.5	146.10	17	13 26 39.93	9 12 25.0	142.22
18	12 44 4.25	3 39 42.1	146.05	18	13 28 33.34	9 26 38.3	141.93
19	12 45 53.62	3 54 18.4	146.00	19	13 30 26.98	9 40 49.9	141.63
20	12 47 43.12	4 8 54.4	145.92	20	13 32 20.85	9 54 59.7	141.32
21	12 49 32.75	4 23 29.9	145.85	21	13 34 14.96	10 9 7.6	141.00
22	12 51 22.51	4 38 5.0	145.75	22	13 36 9.31	10 23 13.6	140.67
23	12 53 12.42	4 52 39.5	145.67	23	13 38 3.90	10 37 17.6	140.32
24	12 55 2.47	S. 5 7 13.5		24	13 39 58.73	S. 10 51 19.5	

PHASES OF THE MOON.

☾ First Quarter	- - - - -	^d ^h ^m
○ Full Moon	- - - - -	7 11 11.7
☾ Last Quarter	- - - - -	14 1 28.0
● New Moon	- - - - -	21 3 54.1
	- - - - -	29 8 0.8

☾ Perigee	- - - - -	^d ^h
☾ Apogee	- - - - -	12 23
	- - - - -	25 4

MEAN TIME.											
LUNAR DISTANCES.											
Day of the Month.	Star's Name and Position.		Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .		
			° ' "		° ' "		° ' "		° ' "		
1	Spica η	E.	28 29 20	3005	26 59 14	3002	25 29 4	2999	23 58 50		
	Mars	E.	30 53 35	3234	29 28 6	3229	28 2 31	3223	26 36 49		
	Saturn	E.	48 51 10	3036	47 21 42	3031	45 52 8	3027	44 22 29		
	Antares	E.	74 19 34	2992	72 49 11	2987	71 18 42	2981	69 48 6		
2	SUN	W.	25 48 28	3349	27 11 43	3339	28 35 10	3328	29 58 49		
	Saturn	E.	36 52 47	3000	35 22 34	2996	33 52 16	2991	32 21 52		
	Antares	E.	62 13 15	2946	60 41 54	2939	59 10 24	2932	57 38 46		
3	SUN	W.	37 0 6	3266	38 24 57	3256	39 50 0	3246	41 15 15		
	Saturn	E.	24 48 52	2974	23 18 7	2975	21 47 23	2977	20 16 41		
	Antares	E.	49 58 22	2889	48 25 49	2880	46 53 5	2873	45 20 11		
	α Aquilæ	E.	100 0 8	3752	98 44 16	3738	97 28 9	3723	96 11 46		
4	SUN	W.	48 24 33	3183	49 51 3	3172	51 17 46	3160	52 44 43		
	Venus	W.	19 20 59	3263	20 45 54	3251	22 11 3	3241	23 36 24		
	Antares	E.	37 32 55	2820	35 58 53	2811	34 24 39	2801	32 50 12		
	α Aquilæ	E.	89 46 41	3656	88 29 7	3648	87 11 25	3640	85 53 34		
5	SUN	W.	60 2 57	3088	61 31 21	3077	62 59 59	3063	64 28 54		
	Venus	W.	30 46 37	3170	32 13 22	3157	33 40 23	3143	35 7 40		
	Spica η	W.	21 7 16	2758	22 42 39	2744	24 18 21	2730	25 54 21		
	Mars	W.	15 54 23	2967	17 25 17	2954	18 56 28	2941	20 27 53		
	Antares	E.	24 54 38	2738	23 18 49	2728	21 42 46	2717	20 6 28		
	α Aquilæ	E.	79 22 52	3614	78 4 33	3614	76 46 14	3614	75 27 53		
6	SUN	W.	71 57 33	2982	73 28 8	2968	74 59 1	2953	76 30 13		
	Venus	W.	42 28 5	3062	43 57 1	3048	45 26 14	3033	46 55 46		
	Spica η	W.	33 58 55	2648	35 36 45	2635	37 14 53	2621	38 53 20		
	Mars	W.	28 9 5	2864	29 42 10	2851	31 15 32	2837	32 49 12		
	Saturn	W.	13 45 54	2828	15 19 45	2785	16 54 32	2749	18 30 7		
	α Aquilæ	E.	68 57 14	3645	67 39 28	3657	66 21 55	3670	65 4 36		
	Fomalhaut	E.	94 34 55	2834	93 1 11	2821	91 27 10	2807	89 52 51		
7	SUN	W.	84 10 52	2863	85 43 58	2848	87 17 24	2832	88 51 11		
	Venus	W.	54 28 5	2942	55 59 31	2926	57 31 17	2910	59 3 23		
	Spica η	W.	47 10 24	2535	48 50 49	2520	50 31 34	2506	52 12 39		
	Mars	W.	40 42 12	2750	42 17 46	2735	43 53 40	2720	45 29 54		
	Saturn	W.	26 36 57	2603	28 15 48	2583	29 55 6	2565	31 34 49		
	α Aquilæ	E.	58 43 2	3806	57 28 6	3841	56 13 46	3881	55 0 7		
	Fomalhaut	E.	81 56 58	2729	80 20 57	2717	78 44 39	2705	77 8 5		
8	SUN	W.	96 45 15	2736	98 21 7	2720	99 57 21	2704	101 33 56		
	Venus	W.	66 49 6	2812	68 23 18	2796	69 57 51	2779	71 32 46		
	Spica η	W.	60 43 20	2415	62 26 33	2401	64 10 7	2386	65 54 2		
	Mars	W.	53 36 13	2626	55 14 32	2611	56 53 12	2595	58 32 14		
	Saturn	W.	39 59 32	2461	41 41 40	2444	43 24 12	2428	45 7 7		
	Antares	W.	14 49 2	2419	16 32 10	2403	18 15 41	2387	19 59 34		
	Fomalhaut	E.	69 1 25	2639	67 23 23	2630	65 45 9	2621	64 6 43		
	α Pegasi	E.	90 25 19	2743	88 49 36	2728	87 13 33	2714	85 37 12		
9	SUN	W.	109 42 15	2608	111 20 59	2593	113 0 4	2577	114 39 30		
	Venus	W.	79 32 45	2681	81 9 50	2666	82 47 16	2649	84 25 4		
	Spica η	W.	74 39 5	2296	76 25 10	2281	78 11 38	2267	79 58 26		

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.	
1	Spica μ E.	22 28 31 2992	20 58 8 2989	19 27 42 2988	17 57 14 2987	Mars E.	25 11 0 3212	23 45 5 3205	22 19 2 3198	20 52 50 3190
	Saturn E.	42 52 44 3017	41 22 53 3013	39 52 57 3009	38 22 55 3004	Antares E.	68 17 22 2970	66 46 32 2964	65 15 34 2958	63 44 28 2952
2	SUN W.	31 22 41 3307	32 46 44 3296	34 11 0 3287	35 35 27 3277	Saturn E.	30 51 24 2984	29 20 51 2981	27 50 15 2978	26 19 35 2976
	Antares E.	56 7 0 2919	54 35 5 2911	53 3 0 2904	51 30 46 2896	Saturn E.	30 51 24 2984	29 20 51 2981	27 50 15 2978	26 19 35 2976
3	SUN W.	42 40 42 3225	44 6 21 3215	45 32 12 3204	46 58 16 3194	Saturn E.	18 46 4 2988	17 15 36 2999	15 45 22 3017	14 15 31 3047
	Antares E.	43 47 6 2856	42 13 51 2847	40 40 24 2838	39 6 45 2829	α Aquilæ E.	94 55 10 3698	93 38 21 3686	92 21 19 3675	91 4 5 3665
4	SUN W.	54 11 53 3138	55 39 17 3125	57 6 56 3114	58 34 49 3101	Venus W.	25 1 59 3217	26 27 48 3206	27 53 50 3194	29 20 6 3182
	Antares E.	31 15 32 2780	29 40 38 2771	28 5 32 2760	26 30 12 2750	α Aquilæ E.	84 35 36 3628	83 17 32 3623	81 59 23 3619	80 41 9 3616
5	SUN W.	65 58 4 3037	67 27 31 3023	68 57 15 3010	70 27 15 2996	Venus W.	36 35 12 3118	38 3 0 3104	39 31 5 3090	40 59 27 3077
	Spica μ W.	27 30 40 2703	29 7 16 2689	30 44 11 2675	32 21 24 2662	Mars W.	21 59 36 2917	23 31 33 2904	25 3 47 2891	26 36 18 2878
	Antares E.	18 29 56 2695	16 53 9 2684	15 16 7 2673	13 38 51 2662	α Aquilæ E.	74 9 37 3619	72 51 23 3623	71 33 13 3628	70 15 9 3636
6	SUN W.	78 1 42 2924	79 33 31 2909	81 5 38 2894	82 38 5 2878	Venus W.	48 25 36 3003	49 55 45 2989	51 26 12 2973	52 56 59 2958
	Spica μ W.	40 32 6 2593	42 11 11 2578	43 50 36 2564	45 30 20 2550	Mars W.	34 23 11 2808	35 57 28 2794	37 32 3 2779	39 6 58 2765
	Saturn W.	20 6 23 2691	21 43 15 2667	23 20 39 2644	24 58 34 2623	α Aquilæ E.	63 47 33 3703	62 30 49 3724	61 14 27 3747	59 58 30 3775
	Fomalhaut E.	88 18 15 2780	86 43 21 2767	85 8 10 2755	83 32 43 2741	Saturn W.	33 14 57 2529	34 55 30 2512	36 36 27 2495	38 17 48 2478
7	SUN W.	90 25 18 2800	91 59 46 2784	93 34 35 2769	95 9 44 2752	Venus W.	60 35 50 2877	62 8 38 2862	63 41 46 2845	65 15 15 2828
	Spica μ W.	53 54 5 2476	55 35 52 2461	57 18 0 2446	59 0 29 2431	Mars W.	47 6 29 2689	48 43 24 2674	50 20 39 2659	51 58 15 2642
	Saturn W.	33 14 57 2529	34 55 30 2512	36 36 27 2495	38 17 48 2478	α Aquilæ E.	53 47 13 3975	52 35 9 4032	51 24 1 4096	50 13 55 4167
	Fomalhaut E.	75 31 15 2681	73 54 9 2670	72 16 49 2659	70 39 14 2649	Saturn W.	46 50 25 2396	48 34 6 2380	50 18 10 2364	52 2 36 2348
8	SUN W.	103 10 53 2672	104 48 11 2655	106 25 51 2640	108 3 52 2624	Venus W.	73 8 3 2747	74 43 41 2730	76 19 41 2714	77 56 2 2698
	Spica μ W.	67 38 19 2355	69 22 58 2340	71 7 59 2326	72 53 21 2311	Mars W.	60 11 38 2564	61 51 22 2548	63 31 28 2532	65 11 56 2517
	Saturn W.	46 50 25 2396	48 34 6 2380	50 18 10 2364	52 2 36 2348	Antares W.	21 43 51 2356	23 28 29 2340	25 13 30 2325	26 58 53 2310
	Fomalhaut E.	62 28 6 2607	60 49 20 2601	59 10 26 2596	57 31 25 2591	α Pegasi E.	84 0 33 2688	82 23 37 2675	80 46 24 2664	79 8 56 2654
9	SUN W.	116 19 18 2548	117 59 25 2533	119 39 53 2518	121 20 41 2504	Venus W.	86 3 12 2619	87 41 41 2604	89 20 30 2589	90 59 40 2574
	Spica μ W.	81 45 35 2239	83 33 5 2225	85 20 56 2211	87 9 7 2197					

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	N ^{oon} .	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	
9	Mars W.	66 52 45	2502	68 33 56	2487	70 15 28	2472	71 57 21	
	Saturn W.	53 47 25	2323	55 32 36	2318	57 18 9	2302	59 4 5	
	Antares W.	28 44 38	2295	30 30 45	2280	32 17 14	2266	34 4 4	
	Fomalhaut E.	55 52 18	2589	54 13 8	2588	52 33 57	2588	50 54 46	
	α Pegasi E.	77 31 14	2643	75 53 18	2635	74 15 10	2627	72 36 51	
10	Venus W.	92 39 10	2560	94 19 0	2546	95 59 9	2533	97 39 37	
	Mars W.	80 31 57	2386	82 15 52	2373	84 0 6	2360	85 44 39	
	Saturn W.	67 58 59	2218	69 47 0	2205	71 35 20	2192	73 23 59	
	Antares W.	43 3 30	2183	44 52 23	2170	46 41 36	2157	48 31 8	
	Fomalhaut E.	42 40 58	2646	41 3 6	2669	39 25 44	2696	37 48 59	
11	α Pegasi E.	64 23 23	2602	62 44 31	2604	61 5 41	2607	59 26 55	
	Venus W.	106 6 18	2460	107 48 27	2450	109 30 50	2441	111 13 27	
	Mars W.	94 31 45	2291	96 17 58	2281	98 4 26	2272	99 51 7	
	Saturn W.	82 31 37	2125	84 21 58	2116	86 12 32	2107	88 3 20	
	Antares W.	57 43 11	2091	59 34 24	2082	61 25 51	2073	63 17 32	
12	α Pegasi E.	51 16 4	2679	49 38 56	2703	48 2 20	2731	46 26 22	
	α Arietis E.	90 50 12	2141	89 0 16	2133	87 10 7	2124	85 19 44	
	Mars W.	108 47 27	2229	110 35 11	2224	112 23 3	2220	114 11 1	
	Saturn W.	97 20 16	2066	99 12 7	2062	101 4 5	2058	102 56 9	
	Antares W.	72 38 54	2032	74 31 39	2026	76 24 32	2022	78 17 31	
13	α Pegasi E.	38 40 32	3047	37 11 17	3134	35 43 49	3238	34 18 25	
	α Arietis E.	76 5 5	2086	74 13 44	2082	72 22 17	2079	70 30 46	
	Saturn W.	112 17 23	2050	114 9 40	2051	116 1 55	2053	117 54 6	
	Antares W.	87 43 23	2013	89 36 37	2014	91 29 50	2016	93 23 0	
	α Arietis E.	61 12 51	2081	59 21 22	2085	57 29 59	2089	55 38 43	
14	Aldebaran E.	91 37 59	2068	89 46 10	2069	87 54 23	2070	86 2 38	
	α Aquilæ W.	58 26 3	3280	59 50 38	3240	61 16 0	3205	62 42 4	
	α Arietis E.	46 25 12	2142	44 35 17	2156	42 45 43	2171	40 56 32	
	Aldebaran E.	76 45 23	2100	74 54 23	2107	73 3 35	2116	71 13 0	
	α Aquilæ W.	69 59 50	3081	71 28 23	3072	72 57 7	3066	74 25 58	
15	Fomalhaut W.	38 21 37	2638	39 59 40	2612	41 38 19	2590	43 17 28	
	α Arietis E.	31 58 10	2311	30 12 27	2346	28 27 35	2387	26 43 41	
	Aldebaran E.	62 4 7	2186	60 15 18	2200	58 26 51	2215	56 38 46	
	Pollux E.	105 36 35	2115	103 45 58	2126	101 55 39	2139	100 5 39	
	α Aquilæ W.	81 50 17	3080	83 18 51	3090	84 47 13	3101	86 15 22	
16	Fomalhaut W.	51 37 15	2541	53 17 31	2543	54 57 45	2546	56 37 55	
	α Pegasi W.	34 21 45	3438	35 43 19	3351	37 6 32	3277	38 31 10	
	Aldebaran E.	47 44 58	2328	45 59 40	2351	44 14 55	2375	42 30 45	
	Pollux E.	91 0 50	2225	89 12 59	2241	87 25 32	2256	85 38 28	
	α Aquilæ W.	93 31 24	3204	94 57 28	3227	96 23 5	3251	97 48 14	
17	Fomalhaut W.	64 56 24	2595	66 35 26	2607	68 14 12	2620	69 52 40	
	α Pegasi W.	45 48 52	3035	47 18 21	3017	48 48 13	3002	50 18 23	
	Aldebaran E.	33 59 29	2551	32 19 26	2588	30 40 14	2629	29 1 58	
	Pollux E.	76 49 24	2361	75 4 53	2378	73 20 47	2397	71 37 8	
	Jupiter E.	120 23 3	2429	118 40 10	2450	116 57 47	2470	115 15 51	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
9	Mars W.	73 39 36 2442		75 22 11 2428		77 5 6 2413		78 48 22 2400	
	Saturn W.	60 50 22 2274		62 37 0 2260		64 23 59 2245		66 11 19 2232	
	Antares W.	35 51 16 2237		37 38 49 2223		39 26 42 2209		41 14 56 2196	
	Fomalhaut E.	49 15 39 2596		47 36 39 2604		45 57 49 2615		44 19 14 2629	
	α Pegasi E.	70 58 22 2613		69 19 45 2609		67 41 2 2605		66 2 14 2603	
10	Venus W.	99 20 23 2507		101 1 26 2494		102 42 47 2483		104 24 24 2471	
	Mars W.	87 29 30 2335		89 14 39 2323		91 0 5 2312		92 45 47 2301	
	Saturn W.	75 12 56 2168		77 2 11 2157		78 51 43 2146		80 41 32 2135	
	Antares W.	50 20 59 2134		52 11 7 2123		54 1 31 2111		55 52 13 2101	
	Fomalhaut E.	36 13 1 2773		34 37 58 2824		33 4 2 2887		31 31 27 2964	
11	α Pegasi E.	57 48 17 2620		56 9 49 2630		54 31 35 2643		52 53 39 2659	
	Venus W.	112 56 17 2423		114 39 19 2416		116 22 31 2408		118 5 54 2401	
	Mars W.	101 38 1 2255		103 25 7 2247		105 12 24 2241		106 59 51 2235	
	Saturn W.	89 54 21 2091		91 45 34 2084		93 36 58 2077		95 28 33 2071	
	Antares W.	65 9 27 2057		67 1 33 2050		68 53 50 2043		70 46 17 2037	
12	α Pegasi E.	44 51 9 2806		43 16 49 2852		41 43 29 2908		40 11 20 2972	
	α Arietis E.	83 29 9 2108		81 38 22 2102		79 47 25 2096		77 56 19 2090	
	Mars W.	115 59 5 2214		117 47 12 2212		119 35 22 2210		121 23 34 2209	
	Saturn W.	104 48 19 2052		106 40 32 2050		108 32 48 2050		110 25 5 2049	
	Antares W.	80 10 36 2016		82 3 45 2015		83 56 56 2014		85 50 9 2013	
13	α Pegasi E.	32 55 23 3503		31 35 2 3672		- - - -		- - - -	
	α Arietis E.	68 39 12 2076		66 47 36 2075		64 55 59 2077		63 4 24 2078	
	Saturn W.	119 46 13 2060		121 38 14 2064		123 30 8 2070		125 21 54 2076	
	Antares W.	95 16 6 2021		97 9 8 2025		99 2 3 2030		100 54 51 2035	
	α Arietis E.	53 47 36 2102		51 56 40 2110		50 5 56 2119		48 15 26 2130	
14	Aldebaran E.	84 10 58 2077		82 19 23 2081		80 27 54 2086		78 36 33 2093	
	α Aquilæ W.	64 8 43 3148		65 35 54 3126		67 3 32 3108		68 31 32 3093	
	α Arietis E.	39 7 47 2207		37 19 30 2229		35 31 46 2254		33 44 38 2281	
	Aldebaran E.	69 22 39 2135		67 32 34 2147		65 42 46 2159		63 53 17 2172	
	α Aquilæ W.	75 54 53 3062		77 23 49 3063		78 52 44 3067		80 21 34 3073	
15	Fomalhaut W.	44 57 0 2561		46 36 49 2551		48 16 51 2545		49 57 1 2543	
	α Arietis E.	25 0 54 2489		23 19 25 2554		21 39 27 2634		20 1 18 2734	
	Aldebaran E.	54 51 6 2249		53 3 52 2268		51 17 5 2287		49 30 47 2307	
	Pollux E.	98 15 59 2165		96 26 39 2179		94 37 40 2194		92 49 3 2210	
	α Aquilæ W.	87 43 14 3129		89 10 48 3146		90 38 2 3163		92 4 55 3183	
16	Fomalhaut W.	58 17 58 2557		59 57 52 2565		61 37 35 2574		63 17 6 2583	
	α Pegasi W.	39 56 59 3167		41 23 48 3124		42 51 29 3088		44 19 53 3060	
	Aldebaran E.	40 47 10 2426		39 4 13 2454		37 21 55 2484		35 40 20 2516	
	Pollux E.	83 51 49 2290		82 5 35 2307		80 19 46 2324		78 34 22 2342	
	α Aquilæ W.	99 12 52 3304		100 36 59 3332		102 0 33 3363		103 23 32 3396	
17	Fomalhaut W.	71 30 50 2647		73 8 41 2662		74 46 12 2677		76 23 23 2693	
	α Pegasi W.	51 48 48 2983		53 19 22 2978		54 50 3 2974		56 20 48 2973	
	Aldebaran E.	27 24 45 2725		25 48 39 2782		24 13 48 2848		22 40 22 2925	
	Pollux E.	69 53 54 2433		68 11 7 2463		66 28 47 2472		64 46 54 2490	
	Jupiter E.	113 34 21 2506		111 53 16 2525		110 12 38 2544		108 32 26 2562	

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^b .	P.L. of diff.	VI ^b .	P.L. of diff.	IX ^b .	
		° ' "		° ' "		° ' "		° ' "	
18	Fomalhaut W.	78 0 13	2709	79 36 41	2725	81 12 47	2742	82 48 31	
	α Pegasi W.	57 51 34	2974	59 22 19	2977	60 53 0	2981	62 23 36	
	α Arietis W.	- - -	-	- - -	-	17 20 49	3146	18 48 3	
	Pollux E.	63 5 26	2508	61 24 24	2527	59 43 48	2546	58 3 39	
	Jupiter E.	106 52 39	2582	105 13 19	2600	103 34 24	2619	101 55 55	
	SUN E.	127 29 11	2840	125 55 35	2859	124 22 24	2879	122 49 38	
19	α Pegasi W.	69 54 30	3029	71 24 7	3039	72 53 32	3050	74 22 43	
	α Arietis W.	26 20 41	2911	27 52 46	2902	29 25 2	2898	30 57 24	
	Pollux E.	49 49 11	2656	48 11 32	2673	46 34 16	2691	44 57 24	
	Regulus E.	86 29 5	2663	84 51 35	2681	83 14 29	2699	81 37 47	
	Jupiter E.	93 49 45	2729	92 13 44	2747	90 38 7	2765	89 2 53	
	SUN E.	115 12 5	2996	113 41 47	3015	112 11 53	3034	110 42 22	
20	α Pegasi W.	81 44 55	3124	83 12 35	3138	84 39 59	3150	86 7 8	
	α Arietis W.	38 38 48	2916	40 10 47	2924	41 42 36	2931	43 14 15	
	Pollux E.	36 58 43	2791	35 24 3	2807	33 49 44	2822	32 15 45	
	Regulus E.	73 39 53	2798	72 5 22	2814	70 31 12	2828	68 57 21	
	Jupiter E.	81 12 19	2866	79 39 16	2881	78 6 33	2897	76 34 10	
	SUN E.	103 20 20	3140	101 52 59	3157	100 25 58	3173	98 59 17	
21	α Arietis W.	50 49 48	2985	52 20 20	2998	53 50 41	3002	55 20 52	
	Aldebaran W.	21 26 27	3327	22 50 7	3288	24 14 32	3258	25 39 33	
	Pollux E.	24 30 35	2909	22 58 27	2922	21 26 36	2935	19 55 2	
	Regulus E.	61 12 48	2913	59 40 46	2925	58 8 59	2937	56 37 27	
	Jupiter E.	68 56 49	2981	67 26 12	2993	65 55 51	3006	64 25 46	
	SUN E.	91 50 24	3262	90 25 28	3276	89 0 48	3288	87 36 23	
22	α Arietis W.	62 49 8	3051	64 18 18	3058	65 47 19	3065	67 16 11	
	Aldebaran W.	32 49 51	3175	34 16 30	3169	35 43 16	3166	37 10 6	
	Regulus E.	49 3 32	3005	47 33 25	3014	46 3 30	3024	44 33 47	
	Jupiter E.	56 58 47	3070	55 30 1	3079	54 1 26	3088	52 33 2	
	SUN E.	80 37 45	3356	79 14 38	3365	77 51 43	3375	76 28 58	
23	α Arietis W.	74 38 41	3100	76 6 51	3104	77 34 56	3109	79 2 55	
	Aldebaran W.	44 24 52	3157	45 51 52	3157	47 18 53	3157	48 45 54	
	Regulus E.	37 7 47	3073	35 39 4	3080	34 10 30	3087	32 42 5	
	Jupiter E.	45 13 26	3132	43 45 55	3138	42 18 32	3143	40 51 15	
	SUN E.	69 37 30	3420	68 15 36	3425	66 53 48	3431	65 32 6	
24	α Arietis W.	86 21 52	3126	87 49 30	3128	89 17 6	3129	90 44 46	
	Aldebaran W.	56 1 2	3155	57 28 5	3155	58 55 8	3153	60 22 13	
	Pollux W.	11 39 48	3105	13 7 52	3101	14 36 1	3098	16 4 13	
	Regulus E.	25 22 9	3132	23 54 38	3140	22 27 17	3150	21 0 8	
	Jupiter E.	33 36 18	3170	32 9 33	3173	30 42 52	3177	29 16 13	
	SUN E.	58 44 47	3452	57 23 29	3455	56 2 14	3456	54 41 1	
25	Aldebaran W.	67 38 6	3143	69 5 24	3141	70 32 44	3138	72 0 8	
	Pollux W.	23 25 51	3087	24 54 17	3085	26 22 45	3083	27 51 16	
	SUN E.	47 55 6	3457	46 33 54	3456	45 12 41	3455	43 51 26	
26	Aldebaran W.	79 17 59	3118	80 45 47	3114	82 13 40	3110	83 41 38	
	Pollux W.	35 14 40	3064	36 43 34	3060	38 12 32	3056	39 41 33	
	SUN E.	37 1 21	3459	35 43 1	3435	34 21 24	3431	32 59 42	

MEAN TIME.

LUNAR DISTANCES.

the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^b .	P.L. of diff.	XVIII ^b .	P.L. of diff.	XXI ^b .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
8	Fomalhaut W.	84 23 52	2776	85 58 51	2794	87 33 27	2812	89 7 39	2830
	α Pegasi W.	63 54 6	2993	65 24 27	3001	66 54 39	3009	68 24 40	3018
	α Arietis W.	20 16 51	3014	21 46 46	2973	23 17 33	2946	24 48 54	2925
	Pollux E.	56 23 55	2583	54 44 36	2602	53 5 43	2620	51 27 15	2638
	Jupiter E.	100 17 52	2656	98 40 13	2675	97 2 59	2693	95 26 10	2711
	Sun E.	121 17 18	2919	119 45 23	2938	118 13 52	2958	116 42 46	2977
19	α Pegasi W.	75 51 39	3074	77 20 21	3086	78 48 48	3099	80 16 59	3111
	α Arietis W.	32 29 47	2898	34 2 9	2901	35 34 27	2904	37 6 41	2909
	Pollux E.	43 20 55	2726	41 44 49	2742	40 9 5	2759	38 33 44	2775
	Regulus E.	80 1 28	2733	78 25 32	2750	76 49 58	2766	75 14 45	2782
	Jupiter E.	87 28 2	2799	85 53 33	2817	84 19 27	2833	82 45 42	2850
	Sun E.	109 13 14	3070	107 44 28	3088	106 16 4	3106	104 48 1	3124
20	α Pegasi W.	87 34 0	3178	89 0 35	3191	90 26 55	3205	91 52 58	3219
	α Arietis W.	44 45 43	2948	46 17 1	2957	47 48 8	2966	49 19 4	2975
	Pollux E.	30 42 6	2852	29 8 46	2866	27 35 44	2881	26 3 1	2895
	Regulus E.	67 23 50	2859	65 50 38	2872	64 17 43	2887	62 45 7	2900
	Jupiter E.	75 2 6	2927	73 30 21	2940	71 58 53	2954	70 27 43	2967
	Sun E.	97 32 54	3204	96 6 50	3220	94 41 4	3234	93 15 35	3249
21	α Arietis W.	56 50 52	3019	58 20 41	3027	59 50 20	3035	61 19 49	3043
	Aldebaran W.	27 5 2	3216	28 30 52	3202	29 56 59	3190	31 23 20	3182
	Pollux E.	18 23 45	2962	16 52 44	2976	15 22 1	2989	13 51 35	3003
	Regulus E.	55 6 11	2962	53 35 10	2973	52 4 24	2984	50 33 51	2995
	Jupiter E.	62 55 55	3029	61 26 18	3040	59 56 55	3051	58 27 45	3061
	Sun E.	86 12 13	3313	84 48 16	3325	83 24 33	3336	82 1 3	3346
22	α Arietis W.	68 44 56	3078	70 13 33	3084	71 42 2	3089	73 10 25	3095
	Aldebaran W.	38 36 58	3161	40 3 54	3158	41 30 53	3158	42 57 52	3157
	Regulus E.	43 4 14	3041	41 34 52	3050	40 5 41	3057	38 36 39	3065
	Jupiter E.	51 4 49	3105	49 36 45	3112	48 8 50	3119	46 41 4	3126
	Sun E.	75 6 23	3392	73 43 57	3400	72 21 40	3407	70 59 31	3414
23	α Arietis W.	80 30 50	3115	81 58 41	3119	83 26 28	3121	84 54 12	3124
	Aldebaran W.	50 12 55	3157	51 39 56	3156	53 6 58	3156	54 34 0	3156
	Regulus E.	31 13 48	3101	29 45 40	3108	28 17 40	3116	26 49 50	3124
	Jupiter E.	39 24 5	3154	37 57 1	3158	36 30 2	3162	35 3 8	3166
	Sun E.	64 10 29	3439	62 48 57	3444	61 27 30	3447	60 6 7	3450
24	α Arietis W.	92 12 13	3130	93 39 46	3131	95 7 18	3132	96 34 49	3133
	Aldebaran W.	61 49 20	3151	63 16 28	3149	64 43 39	3148	66 10 51	3145
	Pollux W.	17 32 28	3094	19 0 43	3092	20 29 5	3090	21 57 27	3088
	Regulus E.	19 33 13	3175	18 6 34	3191	16 40 14	3213	15 14 20	3243
	Jupiter E.	27 49 41	3182	26 23 10	3186	24 56 44	3189	23 30 22	3192
	Sun E.	53 19 50	3457	51 58 38	3459	50 37 28	3458	49 16 17	3458
25	Aldebaran W.	73 27 34	3133	74 55 4	3129	76 22 38	3126	77 50 16	3122
	Pollux W.	29 19 49	3078	30 48 25	3074	32 17 6	3071	33 45 51	3068
	Sun E.	42 30 9	3451	41 8 50	3448	39 47 28	3445	38 26 2	3448
26	Aldebaran W.	85 9 41	3101	86 37 50	3096	88 6 5	3091	89 34 26	3086
	Pollux W.	41 10 44	3047	42 39 58	3043	44 9 18	3038	45 38 44	3033
	Sun E.	31 37 56	3423	30 16 5	3418	28 54 9	3414	27 32 8	3408




CONFIGURATIONS OF THE SATELLITES OF JUPITER

At 16^h 45^m, MEAN TIME.

Day of the Month.	West.	East.
21	·3 ·2	○ ·1 4·
22	·1	○ ·3 ·2 4·
23		○ 1· 2· 4· ·3
24	2· ·1	○ 3·
25	4·	·2 ○ 3·
26	4· 3·	○ ·1 2·
27	4· 3·	1· 2· ○
28	·4 ·3 ·2	○ ·1
29	·4 ·1	○ ·2
30	·4	○ 1· 2· ·3

This Table represents, at 16^h 45^m after *Mean Noon* of each day, the relative positions of Jupiter and his Satellites, as they would appear (disregarding their latitudes) inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of their motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the *shadow* of Jupiter.

ECLIPSES OF THE SATELLITES OF JUPITER.*

LITE.	Day of the Month.	Mean Time.	Sidereal Time.	PHASE as seen in an inverting Telescope.	
.	21	h m s 5 33 32.8	h m s 17 35 4.4	Im.	i * 
	23	0 2 1.5	12 10 31.8	Im.	
	24	18 30 34.4	6 46 3.4	Im.	
	26	12 59 2.1	1 21 29.6	Im.	
	28	7 27 34.3	19 57 0.5	Im.	
	30	1 56 1.9	14 32 26.7	Im.	
[.	22	4 18 49.7	16 24 5.6	Im.	i * 
	25	17 35 32.9	5 54 49.3	Im.	
	29	6 52 15.1	19 25 32.1	Im.	
I.	22	7 49 54.2	19 55 44.7	Im.	i * 
	29	11 48 31.1	0 22 36.7	Im.	

* The Satellites are not visible until the 21st day of this Month,
Jupiter being too near to the Sun.

APPROXIMATE SIDEREAL TIMES
OF THE
OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER,
AND OF THE
TRANSITS OF THE SATELLITES AND THEIR SHADOWS
OVER THE DISC OF THE PLANET.*

Satellite.	OCCULTATIONS.		TRANSITS OF SATELLITES.		TRANSITS OF SHADOWS.	
	Immersion.	Emersion.	Ingress.	Egress.	Ingress.	Egress.
I.	d h m	d h m	d h m	d h m	d h m	d h m
	In	21 20 23	22 15 20	22 17 40	22 14 49	22 17 40
		23 15 0	23 9 57	24 12 17	23 9 24	23 11 40
	the	24 9 37	25* 4 34	25 6 54	25 4 0	25 6 54
		26 4 14	27 23 10	27 1 30	27 22 35	27 0 0
	Shadow.	28 22 51	29 17 47	29 20 7	29 17 11	29 19 40
		30 17 28	30 12 24	31 14 44	30 11 46	31 14 44
II.	In the	22 20 16	24 12 19	24 15 13	23 11 15	24 14 40
	Shadow.	25 9 53	27 1 57	27* 4 50	27 0 47	27 3 10
		29 23 30				
III.	In the	22 1 35	25 12 14	26 15 52	25 9 56	26 13 40
	Shadow.	29 6 27				
IV.			24 0 54	24 5 40	24 19 44	24 0 0

* The Satellites are not visible until the 21st day of this Month, Jupiter being too near to the Sun.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^h .778395. Days.	From Mean Noon of January 1.	
	At Mean Midnight,						Day of the Year.	Fraction of the Year.
	Logarithm of							
	A	B	C	D				
1	+1°2422	-0°8577	+9°7346	-0°9422	13 16 3 ^s .51	162	243	°665
2	1°2449	0°8378	9°7365	0°9429	13 12 7°60	163	244	°668
3	1°2475	0°8168	9°7384	0°9437	13 8 11°70	164	245	°671
4	+1°2500	-0°7945	+9°7402	-0°9444	13 4 15°80	165	246	°674
5	1°2523	0°7709	9°7420	0°9451	13 0 19°89	166	247	°676
6	1°2544	0°7458	9°7439	0°9457	12 56 23°98	167	248	°679
7	+1°2564	-0°7190	+9°7457	-0°9464	12 52 28°07	168	249	°682
8	1°2583	0°6904	9°7474	0°9470	12 48 32°15	169	250	°684
9	1°2601	0°6595	9°7492	0°9476	12 44 36°24	170	251	°687
10	+1°2617	-0°6261	+9°7510	-0°9481	12 40 40°33	171	252	°690
11	1°2632	0°5899	9°7527	0°9486	12 36 44°41	172	253	°693
12	1°2646	0°5501	9°7544	0°9491	12 32 48°51	173	254	°695
13	+1°2659	-0°5061	+9°7561	-0°9496	12 28 52°60	174	255	°698
14	1°2670	0°4571	9°7577	0°9500	12 24 56°70	175	256	°701
15	1°2680	0°4016	9°7594	0°9504	12 21 0°80	176	257	°704
16	+1°2688	-0°3378	+9°7611	-0°9508	12 17 4°90	177	258	°706
17	1°2695	0°2627	9°7627	0°9511	12 13 8°99	178	259	°709
18	1°2701	0°1717	9°7644	0°9514	12 9 13°09	179	260	°712
19	+1°2706	-0°0562	+9°7660	-0°9517	12 5 17°18	180	261	°715
20	1°2710	9°8980	9°7676	0°9519	12 1 21°26	181	262	°717
21	1°2712	9°6463	9°7692	0°9521	11 57 25°35	182	263	°720
22	+1°2713	-8°9766	+9°7708	-0°9523	11 53 29°44	183	264	°723
23	1°2713	+9°4043	9°7724	0°9525	11 49 33°53	184	265	°726
24	1°2711	9°7798	9°7740	0°9526	11 45 37°61	185	266	°728
25	+1°2708	+9°9781	+9°7756	-0°9527	11 41 41°71	186	267	°731
26	1°2704	0°1137	9°7772	0°9528	11 37 45°80	187	268	°734
27	1°2699	0°2169	9°7787	0°9528	11 33 49°90	188	269	°736
28	+1°2692	+0°3001	+9°7803	-0°9528	11 29 53°99	189	270	°739
29	1°2684	0°3699	9°7819	0°9528	11 25 58°09	190	271	°742
30	1°2675	0°4299	9°7834	0°9527	11 22 2°18	191	272	°745
31	+1°2664	+0°4825	+9°7850	-0°9526	11 18 6°28	192	273	°747

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hr.
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.			
		h m s	s	° ' "	"	m s	m s	s
Sun.	1	12 29 40.76	9.070	S. 3 12 29.4	58.30	1 4.31	10 19.86	0.7
Mon.	2	12 33 18.44	9.083	3 35 48.5	58.19	1 4.36	10 38.68	0.7
Tues.	3	12 36 56.44	9.097	3 59 5.1	58.08	1 4.41	10 57.19	0.7
Wed.	4	12 40 34.76	9.111	4 22 18.9	57.94	1 4.46	11 15.38	0.7
Thur.	5	12 44 13.42	9.125	4 45 29.4	57.78	1 4.51	11 33.23	0.7
Frid.	6	12 47 52.43	9.140	5 8 36.2	57.62	1 4.57	11 50.73	0.7
Sat.	7	12 51 31.80	9.158	5 31 39.0	57.44	1 4.63	12 7.87	0.7
Sun.	8	12 55 11.58	9.175	5 54 37.5	57.24	1 4.69	12 24.60	0.7
Mon.	9	12 58 51.78	9.192	6 17 31.2	57.02	1 4.76	12 40.92	0.7
Tues.	10	13 2 32.39	9.212	6 40 19.7	56.80	1 4.83	12 56.81	0.7
Wed.	11	13 6 13.47	9.231	7 3 2.8	56.55	1 4.90	13 12.24	0.7
Thur.	12	13 9 55.02	9.252	7 25 40.0	56.30	1 4.97	13 27.20	0.7
Frid.	13	13 13 37.07	9.274	7 48 11.1	56.03	1 5.04	13 41.65	0.7
Sat.	14	13 17 19.64	9.298	8 10 35.7	55.74	1 5.12	13 55.59	0.7
Sun.	15	13 21 2.78	9.320	8 32 53.5	55.44	1 5.20	14 8.97	0.7
Mon.	16	13 24 46.47	9.345	8 55 4.1	55.13	1 5.28	14 21.79	0.7
Tues.	17	13 28 30.76	9.370	9 17 7.1	54.79	1 5.37	14 34.04	0.7
Wed.	18	13 32 15.65	9.397	9 39 2.1	54.45	1 5.46	14 45.67	0.7
Thur.	19	13 36 1.17	9.424	10 0 49.0	54.09	1 5.55	14 56.68	0.7
Frid.	20	13 39 47.34	9.451	10 22 27.1	53.71	1 5.64	15 7.04	0.7
Sat.	21	13 43 34.17	9.480	10 43 56.2	53.32	1 5.73	15 16.75	0.7
Sun.	22	13 47 21.69	9.508	11 5 15.8	52.90	1 5.83	15 25.76	0.7
Mon.	23	13 51 9.89	9.538	11 26 25.5	52.48	1 5.93	15 34.09	0.7
Tues.	24	13 54 58.81	9.568	11 47 25.1	52.03	1 6.03	15 41.70	0.7
Wed.	25	13 58 48.45	9.598	12 8 13.9	51.57	1 6.13	15 48.59	0.7
Thur.	26	14 2 38.81	9.630	12 28 51.6	51.09	1 6.23	15 54.76	0.7
Frid.	27	14 6 29.93	9.662	12 49 17.8	50.60	1 6.34	16 0.17	0.7
Sat.	28	14 10 21.81	9.693	13 9 32.1	50.08	1 6.45	16 4.83	0.7
Sun.	29	14 14 14.45	9.725	13 29 33.9	49.55	1 6.56	16 8.74	0.7
Mon.	30	14 18 7.86	9.758	13 49 23.0	48.99	1 6.67	16 11.88	0.7
Tues.	31	14 22 2.05	9.792	14 8 58.7	48.43	1 6.78	16 14.24	0.7
Wed.	32	14 25 57.04		S. 14 28 20.9		1 6.90	16 15.81	

* Mean Time of the Semidiameter passing may be found by subtracting 0^m 18 from the Sidereal Time.

AT MEAN NOON.

	Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
		Right Ascension.	Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
n.	1	12 29 42.32	S. 3 12 39.5	16 0.6	10 20.00	12 40 2.32
n.	2	12 33 20.05	3 35 58.8	16 0.9	10 38.82	12 43 58.87
es.	3	12 36 58.10	3 59 15.7	16 1.2	10 57.33	12 47 55.43
ed.	4	12 40 36.47	4 22 29.8	16 1.4	11 15.52	12 51 51.99
ur.	5	12 44 15.17	4 45 40.6	16 1.7	11 33.37	12 55 48.54
d.	6	12 47 54.23	5 8 47.6	16 2.0	11 50.87	12 59 45.10
t.	7	12 51 33.65	5 31 50.7	16 2.3	12 8.01	13 3 41.66
n.	8	12 55 13.48	5 54 49.4	16 2.6	12 24.74	13 7 38.22
n.	9	12 58 53.72	6 17 43.2	16 2.8	12 41.06	13 11 34.78
es.	10	13 2 34.38	6 40 32.0	16 3.1	12 56.95	13 15 31.33
ed.	11	13 6 15.50	7 3 15.3	16 3.4	13 12.38	13 19 27.88
ur.	12	13 9 57.09	7 25 52.7	16 3.7	13 27.34	13 23 24.43
id.	13	13 13 39.19	7 48 23.9	16 4.0	13 41.78	13 27 20.97
t.	14	13 17 21.80	8 10 48.7	16 4.2	13 55.72	13 31 17.52
n.	15	13 21 4.98	8 33 6.6	16 4.5	14 9.10	13 35 14.08
n.	16	13 24 48.71	8 55 17.3	16 4.8	14 21.92	13 39 10.63
es.	17	13 28 33.03	9 17 20.4	16 5.1	14 34.16	13 43 7.19
ed.	18	13 32 17.96	9 39 15.6	16 5.3	14 45.79	13 47 3.75
ur.	19	13 36 3.52	10 1 2.5	16 5.6	14 56.79	13 51 0.31
id.	20	13 39 49.72	10 22 40.7	16 5.8	15 7.15	13 54 56.87
t.	21	13 43 36.58	10 44 9.8	16 6.1	15 16.85	13 58 53.43
n.	22	13 47 24.13	11 5 29.4	16 6.4	15 25.85	14 2 49.98
n.	23	13 51 12.36	11 26 39.2	16 6.6	15 34.18	14 6 46.54
es.	24	13 55 1.31	11 47 38.8	16 6.9	15 41.78	14 10 43.09
ed.	25	13 58 50.98	12 8 27.6	16 7.2	15 48.66	14 14 39.64
ur.	26	14 2 41.36	12 29 5.2	16 7.4	15 54.83	14 18 36.19
d.	27	14 6 32.51	12 49 31.4	16 7.6	16 0.23	14 22 32.74
t.	28	14 10 24.41	13 9 45.6	16 7.9	16 4.88	14 26 29.29
n.	29	14 14 17.06	13 29 47.3	16 8.2	16 8.78	14 30 25.84
n.	30	14 18 10.49	13 49 36.3	16 8.4	16 11.91	14 34 22.40
es.	31	14 22 4.70	14 9 11.9	16 8.7	16 14.26	14 38 18.96
ed.	32	14 25 59.70	S. 14 28 34.0	16 8.9	16 15.82	14 42 15.52

* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	188 5 14.0	N. 0.02	0.0001420	15 10.5	15 14.3	55 41.4	55 35.4
2	189 4 21.8	S. 0.12	0.0000154	15 18.2	15 22.3	56 9.7	56 21.4
3	190 3 31.7	0.24	9.9998884	15 26.4	15 30.6	56 39.5	56 54.5
4	191 2 43.5	0.35	9.9997608	15 34.8	15 39.2	57 10.5	57 26.1
5	192 1 57.1	0.43	9.9996330	15 43.6	15 48.1	57 42.9	57 59.2
6	193 1 12.4	0.48	9.9995049	15 52.6	15 57.0	58 15.8	58 32.1
7	194 0 29.4	0.51	9.9993769	16 1.5	16 5.7	58 48.4	59 1.7
8	194 59 48.3	0.51	9.9992490	16 9.7	16 13.5	59 18.7	59 32.1
9	195 59 8.8	0.47	9.9991215	16 16.8	16 19.6	59 44.4	59 54.7
10	196 58 31.0	0.41	9.9989944	16 21.7	16 23.1	60 2.5	60 7.6
11	197 57 55.1	0.32	9.9988679	16 23.6	16 23.3	60 9.7	60 8.4
12	198 57 20.9	0.21	9.9987423	16 22.1	16 20.0	60 4.2	59 56.1
13	199 56 48.7	S. 0.09	9.9986175	16 17.0	16 13.0	59 45.2	59 30.1
14	200 56 18.5	N. 0.03	9.9984935	16 8.4	16 3.1	59 13.9	58 54.1
15	201 55 50.5	0.17	9.9983706	15 57.3	15 51.0	58 32.9	58 9.1
16	202 55 24.5	0.28	9.9982488	15 44.4	15 37.7	57 45.7	57 21.1
17	203 55 0.7	0.38	9.9981278	15 31.0	15 24.5	56 56.7	56 32.1
18	204 54 39.1	0.47	9.9980078	15 18.2	15 12.2	56 9.5	55 47.1
19	205 54 19.8	0.53	9.9978888	15 6.7	15 1.8	55 27.4	55 9.1
20	206 54 2.6	0.56	9.9977706	14 57.4	14 53.7	54 53.3	54 39.1
21	207 53 47.7	0.57	9.9976532	14 50.7	14 48.4	54 28.7	54 20.1
22	208 53 35.1	0.54	9.9975367	14 46.8	14 45.9	54 14.3	54 11.1
23	209 53 24.7	0.49	9.9974205	14 45.6	14 46.1	54 10.0	54 11.1
24	210 53 16.6	0.40	9.9973050	14 47.3	14 49.0	54 16.0	54 22.1
25	211 53 10.7	0.30	9.9971899	14 51.3	14 54.1	54 30.8	54 41.1
26	212 53 6.7	0.17	9.9970751	14 57.3	15 0.9	54 52.8	55 6.1
27	213 53 5.0	N. 0.04	9.9969607	15 4.8	15 8.9	55 20.3	55 35.1
28	214 53 5.3	S. 0.11	9.9968465	15 13.3	15 17.7	55 51.4	56 7.1
29	215 53 7.5	0.24	9.9967325	15 22.1	15 26.5	56 23.9	56 40.1
30	216 53 11.6	0.36	9.9966189	15 30.9	15 35.1	56 56.1	57 11.1
31	217 53 17.6	0.47	9.9965059	15 39.1	15 42.9	57 26.2	57 40.1
32	218 53 25.4	S. 0.56	9.9963931	15 46.5	15 49.8	57 53.4	58 5.1

MEAN TIME.

Day of the Week.	Day of the Month.	THE MOON'S					
		Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
		[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	^d	^h ^m
Sun.	1	207 6 26.8	213 24 31.5	S. 0 25 54.3	S. 1 0 25.7	1.7	1 1.7
Mon.	2	219 45 39.2	226 9 59.0	1 34 29.8	2 7 40.1	2.7	1 46.7
Tues.	3	232 37 39.8	239 8 51.0	2 39 30.7	3 9 34.4	3.7	2 35.3
Wed.	4	245 43 41.4	252 22 20.6	3 37 24.8	4 2 36.6	4.7	3 28.3
Thur.	5	259 4 55.4	265 51 32.7	4 24 44.2	4 43 24.3	5.7	4 25.5
Frid.	6	272 42 16.7	279 37 9.4	4 58 15.2	5 8 56.5	6.7	5 25.7
Sat.	7	286 36 9.0	293 39 9.5	5 15 11.9	5 16 47.5	7.7	6 27.0
Sun.	8	300 45 59.3	307 56 23.0	5 13 34.0	5 5 27.0	8.7	7 26.9
Mon.	9	315 9 57.8	322 26 15.9	4 52 27.0	4 34 41.3	9.7	8 23.9
Tues.	10	329 44 43.7	337 4 40.6	4 12 22.8	3 45 51.6	10.7	9 17.7
Wed.	11	344 25 22.9	351 46 2.8	3 15 33.8	2 42 2.3	11.7	10 8.9
Thur.	12	359 5 50.2	6 23 55.4	2 5 53.0	1 27 47.6	12.7	10 58.4
Frid.	13	13 39 28.9	20 51 45.1	S. 0 48 29.3	S. 0 8 42.0	13.7	11 47.6
Sat.	14	28 0 1.9	35 3 43.9	N. 0 30 52.4	N. 1 9 32.2	14.7	12 37.5
Sun.	15	42 2 21.2	48 55 32.5	1 46 41.6	2 21 47.9	15.7	13 29.0
Mon.	16	55 43 2.2	62 24 43.3	2 54 23.6	3 24 5.8	16.7	14 22.4
Tues.	17	69 0 36.2	75 30 47.9	3 50 37.9	4 13 46.8	17.7	15 17.2
Wed.	18	81 55 31.0	88 15 4.7	4 33 24.5	4 49 24.3	18.7	16 12.3
Thur.	19	94 29 51.2	100 40 17.9	5 1 45.7	5 10 27.3	19.7	17 6.2
Frid.	20	106 46 54.7	112 50 13.6	5 15 32.4	5 17 3.1	20.7	17 57.7
Sat.	21	118 50 48.7	124 49 14.9	5 15 4.7	5 9 42.0	21.7	18 46.2
Sun.	22	130 46 7.5	136 42 1.9	5 1 1.3	4 49 9.1	22.7	19 31.5
Mon.	23	142 37 33.2	148 33 14.6	4 34 12.8	4 16 20.4	23.7	20 14.3
Tues.	24	154 29 39.4	160 27 18.1	3 55 40.9	3 32 24.0	24.7	20 55.3
Wed.	25	166 26 40.3	172 28 12.1	3 6 41.2	2 38 45.3	25.7	21 35.5
Thur.	26	178 32 17.6	184 39 18.0	2 8 50.4	1 37 12.9	26.7	22 16.0
Frid.	27	190 49 31.7	197 3 12.2	N. 1 4 11.6	N. 0 30 6.5	27.7	22 58.0
Sat.	28	203 20 32.1	209 41 38.0	S. 0 4 39.8	S. 0 39 42.2	28.7	23 42.5
Sun.	29	216 6 33.5	222 35 20.5	1 14 34.6	1 48 49.0	0.0	♄
Mon.	30	229 7 55.8	235 44 15.0	2 21 57.1	2 53 28.5	1.0	0 30.6
Tues.	31	242 24 9.1	249 7 29.4	3 22 54.7	3 49 46.7	2.0	1 23.1
Wed.	32	255 54 3.6	262 43 38.8	S. 4 13 38.7	S. 4 34 4.0	3.0	2 20.0

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.
SUNDAY 1.				TUESDAY 3.		
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]
0	13 39 58.73	S. 10 51 19.5	139.97	0	15 17 58.25	S. 21 0 56.8
1	13 41 53.82	11 5 19.3	139.60	1	15 20 9.75	21 11 47.3
2	13 43 49.17	11 19 16.9	139.23	2	15 22 21.67	21 22 31.8
3	13 45 44.78	11 33 12.3	138.83	3	15 24 33.99	21 33 10.3
4	13 47 40.65	11 47 5.3	138.43	4	15 26 46.73	21 43 42.7
5	13 49 36.79	12 0 55.9	138.03	5	15 28 59.89	21 54 8.8
6	13 51 33.20	12 14 44.1	137.60	6	15 31 13.46	22 4 28.7
7	13 53 29.89	12 28 29.7	137.17	7	15 33 27.44	22 14 42.3
8	13 55 26.87	12 42 12.7	136.73	8	15 35 41.85	22 24 49.4
9	13 57 24.12	12 55 53.1	136.27	9	15 37 56.67	22 34 49.9
10	13 59 21.67	13 9 30.7	135.78	10	15 40 11.91	22 44 43.8
11	14 1 19.51	13 23 5.4	135.32	11	15 42 27.56	22 54 30.9
12	14 3 17.64	13 36 37.3	134.82	12	15 44 43.64	23 4 11.3
13	14 5 16.07	13 50 6.2	134.32	13	15 47 0.14	23 13 44.8
14	14 7 14.81	14 3 32.1	133.78	14	15 49 17.05	23 23 11.2
15	14 9 13.86	14 16 54.8	133.27	15	15 51 34.39	23 32 30.6
16	14 11 13.22	14 30 14.4	132.72	16	15 53 52.15	23 41 42.8
17	14 13 12.90	14 43 30.7	132.17	17	15 56 10.32	23 50 47.8
18	14 15 12.89	14 56 43.7	131.60	18	15 58 28.92	23 59 45.4
19	14 17 13.21	15 9 53.3	131.02	19	16 0 47.93	24 8 35.6
20	14 19 13.86	15 22 59.4	130.42	20	16 3 7.36	24 17 18.3
21	14 21 14.83	15 36 1.9	129.82	21	16 5 27.20	24 25 53.4
22	14 23 16.15	15 49 0.8	129.20	22	16 7 47.46	24 34 20.8
23	14 25 17.80	S. 16 1 56.0	128.57	23	16 10 8.13	S. 24 42 40.5
MONDAY 2.				WEDNESDAY 4.		
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]
0	14 27 19.79	S. 16 14 47.4	127.92	0	16 12 29.22	S. 24 50 52.3
1	14 29 22.13	16 27 34.9	127.27	1	16 14 50.72	24 58 56.2
2	14 31 24.81	16 40 18.5	126.58	2	16 17 12.63	25 6 52.0
3	14 33 27.85	16 52 58.0	125.92	3	16 19 34.95	25 14 39.7
4	14 35 31.24	17 5 33.5	125.22	4	16 21 57.67	25 22 19.2
5	14 37 35.00	17 18 4.8	124.50	5	16 24 20.80	25 29 50.4
6	14 39 39.11	17 30 31.8	123.78	6	16 26 44.32	25 37 13.2
7	14 41 43.59	17 42 54.5	123.03	7	16 29 8.25	25 44 27.5
8	14 43 48.44	17 55 12.7	122.30	8	16 31 32.56	25 51 33.3
9	14 45 53.65	18 7 26.5	121.52	9	16 33 57.27	25 58 30.5
10	14 47 59.24	18 19 35.6	120.75	10	16 36 22.37	26 5 19.0
11	14 50 5.21	18 31 40.1	119.97	11	16 38 47.85	26 11 58.6
12	14 52 11.56	18 43 39.9	119.17	12	16 41 13.71	26 18 29.4
13	14 54 18.29	18 55 34.9	118.33	13	16 43 39.95	26 24 51.2
14	14 56 25.40	19 7 24.9	117.52	14	16 46 6.57	26 31 4.0
15	14 58 32.90	19 19 10.0	116.65	15	16 48 33.55	26 37 7.6
16	15 0 40.80	19 30 49.9	115.82	16	16 51 0.91	26 43 2.1
17	15 2 49.08	19 42 24.8	114.92	17	16 53 28.62	26 48 47.3
18	15 4 57.76	19 53 54.3	114.05	18	16 55 56.69	26 54 23.1
19	15 7 6.84	20 5 18.6	113.13	19	16 58 25.11	26 59 49.5
20	15 9 16.31	20 16 37.4	112.22	20	17 0 53.87	27 5 6.4
21	15 11 26.19	20 27 50.7	111.28	21	17 3 22.98	27 10 13.7
22	15 13 36.47	20 38 58.4	110.35	22	17 5 52.43	27 15 11.4
23	15 15 47.16	20 50 0.5	109.38	23	17 8 22.21	27 19 59.3
24	15 17 58.25	S. 21 0 56.8		24	17 10 52.31	S. 27 24 37.5

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 5.				SATURDAY 7.		
m s	° ' "	"		h m s	° ' "	"
10 52' 31	S. 27 24 37' 5	44' 72	0	19 14 56' 36	S. 27 38 30' 4	42' 53
13 22' 74	27 29 5' 8	43' 07	1	19 17 32' 96	27 34 15' 2	44' 38
15 53' 48	27 33 24' 2	41' 40	2	19 20 9' 48	27 29 48' 9	46' 27
18 24' 53	27 37 32' 6	39' 73	3	19 22 45' 91	27 25 11' 3	48' 10
20 55' 89	27 41 31' 0	38' 03	4	19 25 22' 23	27 20 22' 7	49' 95
23 27' 53	27 45 19' 2	36' 35	5	19 27 58' 44	27 15 23' 0	51' 80
25 59' 47	27 48 57' 3	34' 63	6	19 30 34' 53	27 10 12' 2	53' 63
28 31' 68	27 52 25' 1	32' 92	7	19 33 10' 50	27 4 50' 4	55' 47
31 4' 17	27 55 42' 6	31' 18	8	19 35 46' 34	26 59 17' 6	57' 30
33 36' 93	27 58 49' 7	29' 47	9	19 38 22' 03	26 53 33' 8	59' 12
36 9' 95	28 1 46' 5	27' 70	10	19 40 57' 58	26 47 39' 1	60' 93
38 43' 22	28 4 32' 7	25' 95	11	19 43 32' 97	26 41 33' 5	62' 75
41 16' 74	28 7 8' 4	24' 18	12	19 46 8' 20	26 35 17' 0	64' 53
43 50' 50	28 9 33' 5	22' 42	13	19 48 43' 25	26 28 49' 8	66' 33
46 24' 49	28 11 48' 0	20' 63	14	19 51 18' 13	26 22 11' 8	68' 12
48 58' 69	28 13 51' 8	18' 85	15	19 53 52' 82	26 15 23' 1	69' 90
51 33' 12	28 15 44' 9	17' 05	16	19 56 27' 32	26 8 23' 7	71' 65
54 7' 75	28 17 27' 2	15' 25	17	19 59 1' 63	26 1 13' 8	73' 42
56 42' 58	28 18 58' 7	13' 43	18	20 1 35' 73	25 53 53' 3	75' 17
59 17' 60	28 20 19' 3	11' 62	19	20 4 9' 62	25 46 22' 3	76' 92
1 52' 80	28 21 29' 0	9' 80	20	20 6 43' 30	25 38 40' 8	78' 63
4 28' 17	28 22 27' 8	7' 95	21	20 9 16' 76	25 30 49' 0	80' 35
7 3' 71	28 23 15' 5	6' 13	22	20 11 49' 99	25 22 46' 9	82' 07
9 39' 41	S. 28 23 52' 3	4' 28	23	20 14 22' 99	S. 25 14 34' 5	83' 77
FRIDAY 6.				SUNDAY 8.		
2 15' 25	S. 28 24 18' 0	2' 43	0	20 16 55' 75	S. 25 6 11' 9	85' 45
4 51' 24	28 24 32' 6	0' 58	1	20 19 28' 27	24 57 39' 2	87' 13
7 27' 35	28 24 36' 1	1' 28	2	20 22 0' 54	24 48 56' 4	88' 80
10 3' 58	28 24 28' 4	3' 13	3	20 24 32' 56	24 40 3' 6	90' 45
12 39' 93	28 24 9' 6	5' 00	4	20 27 4' 32	24 31 0' 9	92' 08
15 16' 38	28 23 39' 6	6' 87	5	20 29 35' 82	24 21 48' 4	93' 73
17 52' 92	28 22 58' 4	8' 73	6	20 32 7' 06	24 12 26' 0	95' 33
20 29' 55	28 22 6' 0	10' 62	7	20 34 38' 04	24 2 54' 0	96' 95
23 6' 25	28 21 2' 3	12' 48	8	20 37 8' 74	23 53 12' 3	98' 55
25 43' 02	28 19 47' 4	14' 35	9	20 39 39' 16	23 43 21' 0	100' 12
28 19' 85	28 18 21' 3	16' 25	10	20 42 9' 30	23 33 20' 3	101' 68
30 56' 73	28 16 43' 8	18' 12	11	20 44 39' 17	23 23 10' 2	103' 25
33 33' 64	28 14 55' 1	20' 00	12	20 47 8' 74	23 12 50' 7	104' 78
36 10' 59	28 12 55' 1	21' 88	13	20 49 38' 02	23 2 22' 0	106' 32
38 47' 55	28 10 43' 8	23' 77	14	20 52 7' 01	22 51 44' 1	107' 82
41 24' 53	28 8 21' 2	25' 65	15	20 54 35' 71	22 40 57' 2	109' 32
44 1' 51	28 5 47' 3	27' 53	16	20 57 4' 11	22 30 1' 3	110' 80
46 38' 48	28 3 2' 1	29' 40	17	20 59 32' 21	22 18 56' 5	112' 28
49 15' 44	28 0 5' 7	31' 30	18	21 2 0' 01	22 7 42' 8	113' 72
1 52' 37	27 56 57' 9	33' 17	19	21 4 27' 51	21 56 20' 5	115' 17
4 29' 27	27 53 38' 9	35' 03	20	21 6 54' 71	21 44 49' 5	116' 58
7 6' 13	27 50 8' 7	36' 93	21	21 9 21' 60	21 33 10' 0	118' 00
9 42' 93	27 46 27' 1	38' 78	22	21 11 48' 18	21 21 22' 0	119' 40
2 19' 68	27 42 34' 4	40' 67	23	21 14 14' 46	21 9 25' 6	120' 77
4 56' 36	S. 27 38 30' 4		24	21 16 40' 43	S. 20 57 21' 0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
MONDAY 9.				WEDNESDAY 11.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	21 16 40.43	S. 20 57 21.0	122.13	0	23 7 42.83	S. 9 8 35.0	18
1	21 19 6.09	20 45 8.2	123.47	1	23 9 55.45	8 51 51.2	18
2	21 21 31.44	20 32 47.4	124.82	2	23 12 7.88	8 35 4.4	18
3	21 23 56.48	20 20 18.5	126.12	3	23 14 20.13	8 18 14.7	18
4	21 26 21.21	20 7 41.8	127.42	4	23 16 32.19	8 1 22.2	18
5	21 28 45.62	19 54 57.3	128.70	5	23 18 44.07	7 44 27.1	18
6	21 31 9.73	19 42 5.1	129.98	6	23 20 55.78	7 27 29.5	17
7	21 33 33.53	19 29 5.2	131.22	7	23 23 7.32	7 10 29.4	17
8	21 35 57.02	19 15 57.9	132.45	8	23 25 18.69	6 53 27.0	17
9	21 38 20.20	19 2 43.2	133.67	9	23 27 29.90	6 36 22.4	17
10	21 40 43.08	18 49 21.2	134.87	10	23 29 40.96	6 19 15.7	17
11	21 43 5.64	18 35 52.0	136.05	11	23 31 51.86	6 2 7.0	17
12	21 45 27.90	18 22 15.7	137.22	12	23 34 2.61	5 44 56.4	17
13	21 47 49.85	18 8 32.4	138.37	13	23 36 13.22	5 27 44.0	17
14	21 50 11.50	17 54 42.2	139.50	14	23 38 23.69	5 10 30.0	17
15	21 52 32.85	17 40 45.2	140.62	15	23 40 34.03	4 53 14.4	17
16	21 54 53.89	17 26 41.5	141.70	16	23 42 44.24	4 35 57.3	17
17	21 57 14.64	17 12 31.3	142.80	17	23 44 54.32	4 18 38.9	17
18	21 59 35.08	16 58 14.5	143.85	18	23 47 4.29	4 1 19.3	17
19	22 1 55.24	16 43 51.4	144.88	19	23 49 14.14	3 43 58.6	17
20	22 4 15.09	16 29 22.1	145.92	20	23 51 23.88	3 26 36.9	17
21	22 6 34.66	16 14 46.6	146.93	21	23 53 33.52	3 9 14.2	17
22	22 8 53.93	16 0 5.0	147.92	22	23 55 43.05	2 51 50.8	17
23	22 11 12.92	S. 15 45 17.5	148.90	23	23 57 52.49	S. 2 34 26.7	17
TUESDAY 10.				THURSDAY 12.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	22 13 31.62	S. 15 30 24.1	149.85	0	0 0 1.84	S. 2 17 2.1	17
1	22 15 50.04	15 15 25.0	150.77	1	0 2 11.11	1 59 37.0	17
2	22 18 8.18	15 0 20.4	151.70	2	0 4 20.29	1 42 11.6	17
3	22 20 26.04	14 45 10.2	152.60	3	0 6 29.40	1 24 45.9	17
4	22 22 43.63	14 29 54.6	153.48	4	0 8 38.44	1 7 20.0	17
5	22 25 0.94	14 14 33.7	154.35	5	0 10 47.41	0 49 54.2	17
6	22 27 17.98	13 59 7.6	155.20	6	0 12 56.32	0 32 28.4	17
7	22 29 34.76	13 43 36.4	156.03	7	0 15 5.17	S. 0 15 2.9	17
8	22 31 51.28	13 28 0.2	156.83	8	0 17 13.97	N. 0 2 22.4	17
9	22 34 7.54	13 12 19.2	157.62	9	0 19 22.72	0 19 47.3	17
10	22 36 23.55	12 56 33.5	158.40	10	0 21 31.44	0 37 11.6	17
11	22 38 39.30	12 40 43.1	159.17	11	0 23 40.11	0 54 35.4	17
12	22 40 54.80	12 24 48.1	159.90	12	0 25 48.75	1 11 58.4	17
13	22 43 10.06	12 8 48.7	160.62	13	0 27 57.36	1 29 20.6	17
14	22 45 25.08	11 52 45.0	161.32	14	0 30 5.94	1 46 41.8	17
15	22 47 39.86	11 36 37.1	162.00	15	0 32 14.51	2 4 2.1	17
16	22 49 54.40	11 20 25.1	162.67	16	0 34 23.06	2 21 21.1	17
17	22 52 8.72	11 4 9.1	163.32	17	0 36 31.60	2 38 38.9	17
18	22 54 22.81	10 47 49.2	163.93	18	0 38 40.14	2 55 55.4	17
19	22 56 36.68	10 31 25.6	164.53	19	0 40 48.68	3 13 10.4	17
20	22 58 50.33	10 14 58.4	165.15	20	0 42 57.22	3 30 23.8	17
21	23 1 3.76	9 58 27.5	165.70	21	0 45 5.76	3 47 35.6	17
22	23 3 16.99	9 41 53.3	166.25	22	0 47 14.32	4 4 45.6	17
23	23 5 30.01	9 25 15.8	166.80	23	0 49 22.90	4 21 53.7	17
24	23 7 42.83	S. 9 8 35.0		24	0 51 31.50	N. 4 38 59.8	17

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 13.				SUNDAY 15.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	0 51 31.50	N. 4 38 59.8	170.67	0	2 36 5.54	N. 17 9 17.9	135.38
1	0 53 40.13	4 56 3.8	170.32	1	2 38 19.64	17 22 50.2	134.28
2	0 55 48.78	5 13 5.7	169.93	2	2 40 33.91	17 36 15.9	133.18
3	0 57 57.48	5 30 5.3	169.53	3	2 42 48.36	17 49 35.0	132.08
4	1 0 6.21	5 47 2.5	169.12	4	2 45 2.98	18 2 47.5	130.95
5	1 2 14.98	6 3 57.2	168.68	5	2 47 17.78	18 15 53.2	129.80
6	1 4 23.80	6 20 49.3	168.25	6	2 49 32.76	18 28 52.0	128.67
7	1 6 32.67	6 37 38.8	167.77	7	2 51 47.92	18 41 44.0	127.48
8	1 8 41.60	6 54 25.4	167.30	8	2 54 3.25	18 54 28.9	126.32
9	1 10 50.59	7 11 9.2	166.80	9	2 56 18.77	19 7 6.8	125.13
10	1 12 59.64	7 27 50.0	166.28	10	2 58 34.47	19 19 37.6	123.95
11	1 15 8.76	7 44 27.7	165.75	11	3 0 50.34	19 32 1.3	122.72
12	1 17 17.95	8 1 2.2	165.22	12	3 3 6.40	19 44 17.6	121.50
13	1 19 27.22	8 17 33.5	164.65	13	3 5 22.64	19 56 26.6	120.28
14	1 21 36.56	8 34 1.4	164.07	14	3 7 39.05	20 8 28.3	119.03
15	1 23 45.98	8 50 25.8	163.47	15	3 9 55.65	20 20 22.5	117.77
16	1 25 55.49	9 6 46.6	162.87	16	3 12 12.42	20 32 9.1	116.52
17	1 28 5.09	9 23 3.8	162.25	17	3 14 29.38	20 43 48.2	115.23
18	1 30 14.79	9 39 17.3	161.58	18	3 16 46.51	20 55 19.6	113.95
19	1 32 24.59	9 55 26.8	160.95	19	3 19 3.82	21 6 43.3	112.67
20	1 34 34.48	10 11 32.5	160.27	20	3 21 21.31	21 17 59.3	111.35
21	1 36 44.49	10 27 34.1	159.57	21	3 23 38.97	21 29 7.4	110.03
22	1 38 54.60	10 43 31.5	158.87	22	3 25 56.80	21 40 7.6	108.70
23	1 41 4.83	N. 10 59 24.7	158.15	23	3 28 14.82	N. 21 50 59.8	107.37
SATURDAY 14.				MONDAY 16.			
0	1 43 15.17	N. 11 15 13.6	157.42	0	3 30 33.00	N. 22 1 44.0	106.02
1	1 45 25.64	11 30 58.1	156.65	1	3 32 51.36	22 12 20.1	104.67
2	1 47 36.23	11 46 38.0	155.90	2	3 35 9.88	22 22 48.1	103.32
3	1 49 46.94	12 2 13.4	155.10	3	3 37 28.57	22 33 8.0	101.93
4	1 51 57.79	12 17 44.0	154.32	4	3 39 47.43	22 43 19.6	100.55
5	1 54 8.77	12 33 9.9	153.50	5	3 42 6.46	22 53 22.9	99.17
6	1 56 19.88	12 48 30.9	152.68	6	3 44 25.64	23 3 17.9	97.75
7	1 58 31.13	13 3 47.0	151.83	7	3 46 44.98	23 13 4.4	96.37
8	2 0 42.51	13 18 58.0	150.98	8	3 49 4.49	23 22 42.6	94.95
9	2 2 54.04	13 34 3.9	150.10	9	3 51 24.14	23 32 12.3	93.52
10	2 5 5.72	13 49 4.5	149.23	10	3 53 43.95	23 41 33.4	92.10
11	2 7 17.54	14 3 59.9	148.32	11	3 56 3.91	23 50 46.0	90.65
12	2 9 29.51	14 18 49.8	147.42	12	3 58 24.02	23 59 49.9	89.22
13	2 11 41.63	14 33 34.3	146.48	13	4 0 44.28	24 8 45.2	87.77
14	2 13 53.90	14 48 13.2	145.53	14	4 3 4.67	24 17 31.8	86.30
15	2 16 6.33	15 2 46.4	144.60	15	4 5 25.21	24 26 9.6	84.85
16	2 18 18.92	15 17 14.0	143.62	16	4 7 45.88	24 34 38.7	83.37
17	2 20 31.67	15 31 35.7	142.63	17	4 10 6.68	24 42 58.9	81.90
18	2 22 44.58	15 45 51.5	141.63	18	4 12 27.61	24 51 10.3	80.44
19	2 24 57.65	16 0 1.3	140.63	19	4 14 48.67	24 59 12.7	78.92
20	2 27 10.89	16 14 5.1	139.60	20	4 17 9.85	25 7 6.2	77.43
21	2 29 24.30	16 28 2.7	138.57	21	4 19 31.14	25 14 50.8	75.92
22	2 31 37.87	16 41 54.1	137.52	22	4 21 52.55	25 22 26.3	74.43
23	2 33 51.62	16 55 39.2	136.45	23	4 24 14.07	25 29 52.9	72.90
24	2 36 5.54	N. 17 9 17.9		24	4 26 35.70	N. 25 37 10.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.
TUESDAY 17.				THURSDAY 19.		
0	4 26 35.70	N.25 37 10.3	71.38	0	6 20 22.87	N.28 24 45.5
1	4 28 57.43	25 44 18.6	69.88	1	6 22 43.49	28 24 27.7
2	4 31 19.26	25 51 17.9	68.33	2	6 25 3.95	28 24 0.8
3	4 33 41.19	25 58 7.9	66.82	3	6 27 24.24	28 23 25.0
4	4 36 3.20	26 4 48.8	65.28	4	6 29 44.37	28 22 40.3
5	4 38 25.30	26 11 20.5	63.75	5	6 32 4.32	28 21 46.7
6	4 40 47.48	26 17 43.0	62.20	6	6 34 24.10	28 20 44.2
7	4 43 9.74	26 23 56.2	60.67	7	6 36 43.70	28 19 32.9
8	4 45 32.06	26 30 0.2	59.12	8	6 39 3.10	28 18 12.8
9	4 47 54.46	26 35 54.9	57.57	9	6 41 22.32	28 16 44.0
10	4 50 16.91	26 41 40.3	56.02	10	6 43 41.33	28 15 6.4
11	4 52 39.43	26 47 16.4	54.45	11	6 46 0.15	28 13 20.1
12	4 55 1.99	26 52 43.1	52.90	12	6 48 18.76	28 11 25.2
13	4 57 24.60	26 58 0.5	51.35	13	6 50 37.16	28 9 21.7
14	4 59 47.25	27 3 8.6	49.78	14	6 52 55.35	28 7 9.7
15	5 2 9.94	27 8 7.3	48.22	15	6 55 13.32	28 4 49.1
16	5 4 32.66	27 12 56.6	46.65	16	6 57 31.06	28 2 20.1
17	5 6 55.41	27 17 36.5	45.10	17	6 59 48.58	27 59 42.6
18	5 9 18.17	27 22 7.1	43.52	18	7 2 5.87	27 56 56.8
19	5 11 40.95	27 26 28.2	41.95	19	7 4 22.92	27 54 2.5
20	5 14 3.74	27 30 39.9	40.38	20	7 6 39.73	27 51 0.0
21	5 16 26.53	27 34 42.2	38.80	21	7 8 56.31	27 47 49.2
22	5 18 49.32	27 38 35.0	37.25	22	7 11 12.63	27 44 30.2
23	5 21 12.11	N.27 42 18.5	35.67	23	7 13 28.71	N.27 41 2.9
WEDNESDAY 18.				FRIDAY 20.		
0	5 23 34.88	N.27 45 52.5	34.10	0	7 15 44.54	N.27 37 27.6
1	5 25 57.64	27 49 17.1	32.52	1	7 18 0.11	27 33 44.1
2	5 28 20.37	27 52 32.2	30.95	2	7 20 15.42	27 29 52.7
3	5 30 43.07	27 55 37.9	29.38	3	7 22 30.47	27 25 53.2
4	5 33 5.74	27 58 34.2	27.83	4	7 24 45.26	27 21 45.7
5	5 35 28.36	28 1 21.2	26.25	5	7 26 59.77	27 17 30.4
6	5 37 50.94	28 3 58.7	24.68	6	7 29 14.02	27 13 7.2
7	5 40 13.47	28 6 26.8	23.13	7	7 31 28.00	27 8 36.3
8	5 42 35.94	28 8 45.6	21.57	8	7 33 41.70	27 3 57.6
9	5 44 58.34	28 10 55.0	20.02	9	7 35 55.13	26 59 11.2
10	5 47 20.68	28 12 55.1	18.47	10	7 38 8.27	26 54 17.1
11	5 49 42.94	28 14 45.9	16.90	11	7 40 21.14	26 49 15.5
12	5 52 5.12	28 16 27.3	15.37	12	7 42 33.72	26 44 6.3
13	5 54 27.21	28 17 59.5	13.82	13	7 44 46.02	26 38 49.6
14	5 56 49.21	28 19 22.4	12.27	14	7 46 58.02	26 33 25.6
15	5 59 11.11	28 20 36.0	10.73	15	7 49 9.74	26 27 54.1
16	6 1 32.91	28 21 40.4	9.20	16	7 51 21.17	26 22 15.3
17	6 3 54.59	28 22 35.6	7.67	17	7 53 32.30	26 16 29.2
18	6 6 16.16	28 23 21.6	6.13	18	7 55 43.15	26 10 35.8
19	6 8 37.61	28 23 58.4	4.60	19	7 57 53.69	26 4 35.3
20	6 10 58.94	28 24 26.0	3.08	20	8 0 3.95	25 58 27.7
21	6 13 20.13	28 24 44.5	1.57	21	8 2 13.90	25 52 13.0
22	6 15 41.19	28 24 53.9	0.07	22	8 4 23.56	25 45 51.3
23	6 18 2.10	28 24 54.3	1.47	23	8 6 32.91	25 39 22.4
24	6 20 22.87	N.28 24 45.5		24	8 8 41.97	N.25 32 47.4

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
SATURDAY 21.				MONDAY 23.		
h m s	N. ° ' "	"		h m s	N. ° ' "	"
8 8 41 '97	N. 25 32 47 '0	67 '08	0	9 46 11 '94	N. 18 18 4 '0	111 '70
8 10 50 '73	25 26 4 '5	68 '22	1	9 48 7 '21	18 6 53 '8	112 '42
8 12 59 '18	25 19 15 '2	69 '33	2	9 50 2 '24	17 55 39 '3	113 '13
8 15 7 '33	25 12 19 '2	70 '45	3	9 51 57 '05	17 44 20 '5	113 '83
8 17 15 '19	25 5 16 '5	71 '57	4	9 53 51 '63	17 32 57 '5	114 '55
8 19 22 '73	24 58 7 '1	72 '67	5	9 55 45 '99	17 21 30 '2	115 '23
8 21 29 '98	24 50 51 '1	73 '75	6	9 57 40 '12	17 9 58 '8	115 '93
8 23 36 '92	24 43 28 '6	74 '83	7	9 59 34 '04	16 58 23 '2	116 '60
8 25 43 '57	24 35 59 '6	75 '90	8	10 1 27 '75	16 46 43 '6	117 '28
8 27 49 '90	24 28 24 '2	76 '97	9	10 3 21 '25	16 34 59 '9	117 '93
8 29 55 '94	24 20 42 '4	78 '03	10	10 5 14 '53	16 23 12 '3	118 '58
8 32 1 '68	24 12 54 '2	79 '07	11	10 7 7 '62	16 11 20 '8	119 '25
8 34 7 '11	24 4 59 '8	80 '10	12	10 9 0 '50	15 59 25 '3	119 '88
8 36 12 '24	23 56 59 '2	81 '13	13	10 10 53 '18	15 47 26 '0	120 '52
8 38 17 '08	23 48 52 '4	82 '15	14	10 12 45 '68	15 35 22 '9	121 '15
8 40 21 '61	23 40 39 '5	83 '17	15	10 14 37 '98	15 23 16 '0	121 '75
8 42 25 '84	23 32 20 '5	84 '17	16	10 16 30 '09	15 11 5 '5	122 '38
8 44 29 '78	23 23 55 '5	85 '15	17	10 18 22 '02	14 58 51 '2	122 '97
8 46 33 '42	23 15 24 '6	86 '13	18	10 20 13 '76	14 46 33 '4	123 '58
8 48 36 '76	23 6 47 '8	87 '12	19	10 22 5 '33	14 34 11 '9	124 '15
8 50 39 '81	22 58 5 '1	88 '07	20	10 23 56 '73	14 21 47 '0	124 '75
8 52 42 '56	22 49 16 '7	89 '03	21	10 25 47 '95	14 9 18 '5	125 '32
8 54 45 '02	22 40 22 '5	90 '00	22	10 27 39 '01	13 56 46 '6	125 '88
8 56 47 '19	N. 22 31 22 '5	90 '92	23	10 29 29 '91	N. 13 44 11 '3	126 '43
SUNDAY 22.				TUESDAY 24.		
h m s	N. ° ' "	"		h m s	N. ° ' "	"
8 58 49 '07	N. 22 22 17 '0	91 '85	0	10 31 20 '64	N. 13 31 32 '7	126 '98
9 0 50 '66	22 13 5 '9	92 '78	1	10 33 11 '22	13 18 50 '8	127 '55
9 2 51 '97	22 3 49 '2	93 '68	2	10 35 1 '64	13 6 5 '5	128 '07
9 4 52 '98	21 54 27 '1	94 '60	3	10 36 51 '92	12 53 17 '1	128 '60
9 6 53 '72	21 44 59 '5	95 '50	4	10 38 42 '05	12 40 25 '5	129 '13
9 8 54 '17	21 35 26 '5	96 '38	5	10 40 32 '04	12 27 30 '7	129 '63
9 10 54 '35	21 25 48 '2	97 '27	6	10 42 21 '90	12 14 32 '9	130 '15
9 12 54 '24	21 16 4 '6	98 '13	7	10 44 11 '61	12 1 32 '0	130 '65
9 14 53 '86	21 6 15 '8	99 '00	8	10 46 1 '20	11 48 28 '1	131 '15
9 16 53 '20	20 56 21 '8	99 '87	9	10 47 50 '66	11 35 21 '2	131 '62
9 18 52 '27	20 46 22 '7	100 '70	10	10 49 40 '01	11 22 11 '5	132 '12
9 20 51 '07	20 36 18 '5	101 '53	11	10 51 29 '23	11 8 58 '8	132 '58
9 22 49 '60	20 26 9 '3	102 '37	12	10 53 18 '33	10 55 43 '3	133 '05
9 24 47 '87	20 15 55 '1	103 '20	13	10 55 7 '33	10 42 25 '0	133 '50
9 26 45 '87	20 5 35 '9	104 '00	14	10 56 56 '22	10 29 4 '0	133 '97
9 28 43 '61	19 55 11 '9	104 '82	15	10 58 45 '00	10 15 40 '2	134 '40
9 30 41 '10	19 44 43 '0	105 '60	16	11 0 33 '69	10 2 13 '8	134 '83
9 32 38 '32	19 34 9 '4	106 '40	17	11 2 22 '29	9 48 44 '8	135 '27
9 34 35 '30	19 23 31 '0	107 '18	18	11 4 10 '79	9 35 13 '2	135 '68
9 36 32 '02	19 12 47 '9	107 '95	19	11 5 59 '20	9 21 39 '1	136 '10
9 38 28 '49	19 2 0 '2	108 '72	20	11 7 47 '53	9 8 2 '5	136 '50
9 40 24 '72	18 51 7 '9	109 '47	21	11 9 35 '78	8 54 23 '5	136 '92
9 42 20 '70	18 40 11 '1	110 '22	22	11 11 23 '96	8 40 42 '0	137 '30
9 44 16 '44	18 29 9 '8	110 '97	23	11 13 12 '06	8 26 58 '2	137 '68
9 46 11 '94	N. 18 18 4 '0		24	11 15 0 '10	N. 8 13 12 '1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. for 1
WEDNESDAY 25.				FRIDAY 27.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	11 15 0.10	N. 8 13 12.1	138.07	0	12 41 28.64	S. 3 18 15.6	147
1	11 16 48.07	7 59 23.7	138.43	1	12 43 18.55	3 32 58.5	147
2	11 18 35.99	7 45 33.1	138.78	2	12 45 8.61	3 47 41.3	147
3	11 20 23.85	7 31 40.4	139.17	3	12 46 58.81	4 2 23.9	147
4	11 22 11.66	7 17 45.4	139.50	4	12 48 49.18	4 17 6.3	147
5	11 23 59.42	7 3 48.4	139.83	5	12 50 39.70	4 31 48.5	146
6	11 25 47.14	6 49 49.4	140.18	6	12 52 30.39	4 46 30.3	146
7	11 27 34.82	6 35 48.3	140.50	7	12 54 21.25	5 1 11.7	146
8	11 29 22.46	6 21 45.3	140.83	8	12 56 12.29	5 15 52.6	146
9	11 31 10.07	6 7 40.3	141.13	9	12 58 3.50	5 30 33.1	146
10	11 32 57.66	5 53 33.5	141.45	10	12 59 54.30	5 45 12.9	146
11	11 34 45.23	5 39 24.8	141.73	11	13 1 46.48	5 59 52.2	146
12	11 36 32.77	5 25 14.4	142.03	12	13 3 38.26	6 14 30.7	146
13	11 38 20.30	5 11 2.2	142.32	13	13 5 30.24	6 29 8.5	146
14	11 40 7.83	4 56 48.3	142.58	14	13 7 22.41	6 43 45.5	146
15	11 41 55.34	4 42 32.8	142.87	15	13 9 14.79	6 58 21.6	145
16	11 43 42.86	4 28 15.6	143.12	16	13 11 7.39	7 12 56.8	145
17	11 45 30.38	4 13 56.9	143.37	17	13 13 0.19	7 27 30.9	145
18	11 47 17.91	3 59 36.7	143.62	18	13 14 53.22	7 42 4.0	145
19	11 49 5.45	3 45 15.0	143.85	19	13 16 46.47	7 56 36.0	145
20	11 50 53.00	3 30 51.9	144.08	20	13 18 39.94	8 11 6.7	144
21	11 52 40.58	3 16 27.4	144.30	21	13 20 33.65	8 25 36.2	144
22	11 54 28.18	3 2 1.6	144.52	22	13 22 27.60	8 40 4.3	144
23	11 56 15.81	N. 2 47 34.5	144.72	23	13 24 21.79	S. 8 54 31.0	144
THURSDAY 26.				SATURDAY 28.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	11 58 3.47	N. 2 33 6.2	144.92	0	13 26 16.22	S. 9 8 56.3	143
1	11 59 51.17	2 18 36.7	145.12	1	13 28 10.90	9 23 20.0	143
2	12 1 38.91	2 4 6.0	145.28	2	13 30 5.84	9 37 42.1	143
3	12 3 26.70	1 49 34.3	145.47	3	13 32 1.03	9 52 2.6	143
4	12 5 14.53	1 35 1.5	145.63	4	13 33 56.48	10 6 21.2	142
5	12 7 2.42	1 20 27.7	145.78	5	13 35 52.21	10 20 38.1	142
6	12 8 50.37	1 5 53.0	145.93	6	13 37 48.20	10 34 53.1	142
7	12 10 38.39	0 51 17.4	146.08	7	13 39 44.47	10 49 6.1	141
8	12 12 26.47	0 36 40.9	146.22	8	13 41 41.02	11 3 17.1	141
9	12 14 14.62	0 22 3.6	146.33	9	13 43 37.85	11 17 26.0	141
10	12 16 2.86	N. 0 7 25.6	146.45	10	13 45 34.97	11 31 32.6	140
11	12 17 51.17	S. 0 7 13.1	146.55	11	13 47 32.38	11 45 37.1	140
12	12 19 39.57	0 21 52.4	146.65	12	13 49 30.09	11 59 39.2	139
13	12 21 28.06	0 36 32.3	146.75	13	13 51 28.10	12 13 38.9	139
14	12 23 16.65	0 51 12.8	146.83	14	13 53 26.41	12 27 36.2	139
15	12 25 5.33	1 5 53.8	146.88	15	13 55 25.03	12 41 30.8	138
16	12 26 54.11	1 20 35.1	146.97	16	13 57 23.96	12 55 22.9	138
17	12 28 43.01	1 35 16.9	147.02	17	13 59 23.21	13 9 12.3	137
18	12 30 32.01	1 49 59.0	147.07	18	14 1 22.78	13 22 58.8	137
19	12 32 21.13	2 4 41.4	147.10	19	14 3 22.67	13 36 42.5	136
20	12 34 10.38	2 19 24.0	147.13	20	14 5 22.89	13 50 23.3	136
21	12 35 59.75	2 34 6.8	147.15	21	14 7 23.45	14 4 1.0	135
22	12 37 49.24	2 48 49.7	147.15	22	14 9 24.34	14 17 35.7	135
23	12 39 38.87	3 3 32.6	147.17	23	14 11 25.58	14 31 7.1	134
24	12 41 28.64	S. 3 18 15.6		24	14 13 27.15	S. 14 44 35.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 29.				TUESDAY 31.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	14 13 27.15	S. 14 44 35.3	134.15	0	15 58 22.63	S. 23 58 33.1	89.83
1	14 15 29.08	14 58 0.2	133.57	1	16 0 44.02	24 7 32.1	88.53
2	14 17 31.35	15 11 21.6	132.98	2	16 3 5.83	24 16 23.3	87.22
3	14 19 33.98	15 24 39.5	132.38	3	16 5 28.06	24 25 6.6	85.88
4	14 21 36.97	15 37 53.8	131.78	4	16 7 50.70	24 33 41.9	84.52
5	14 23 40.32	15 51 4.5	131.13	5	16 10 13.75	24 42 9.0	83.17
6	14 25 44.04	16 4 11.3	130.52	6	16 12 37.22	24 50 28.0	81.77
7	14 27 48.12	16 17 14.4	129.85	7	16 15 1.08	24 58 38.6	80.38
8	14 29 52.58	16 30 13.5	129.17	8	16 17 25.35	25 6 40.9	78.98
9	14 31 57.41	16 43 8.5	128.50	9	16 19 50.02	25 14 34.8	77.53
10	14 34 2.62	16 55 59.5	127.80	10	16 22 15.09	25 22 20.0	76.12
11	14 36 8.21	17 8 46.3	127.08	11	16 24 40.55	25 29 56.7	74.65
12	14 38 14.18	17 21 28.8	126.35	12	16 27 6.40	25 37 24.6	73.18
13	14 40 20.54	17 34 6.9	125.62	13	16 29 32.64	25 44 43.7	71.72
14	14 42 27.29	17 46 40.6	124.87	14	16 31 59.26	25 51 54.0	70.20
15	14 44 34.43	17 59 9.8	124.08	15	16 34 26.26	25 58 55.2	68.70
16	14 46 41.96	18 11 34.3	123.28	16	16 36 53.64	26 5 47.4	67.17
17	14 48 49.90	18 23 54.0	122.50	17	16 39 21.38	26 12 30.4	65.62
18	14 50 58.23	18 36 9.0	121.67	18	16 41 49.49	26 19 4.1	64.08
19	14 53 6.97	18 48 19.0	120.85	19	16 44 17.95	26 25 28.6	62.50
20	14 55 16.11	19 0 24.1	119.98	20	16 46 46.77	26 31 43.6	60.93
21	14 57 25.66	19 12 24.0	119.12	21	16 49 15.94	26 37 49.2	59.33
22	14 59 35.62	19 24 18.7	118.25	22	16 51 45.45	26 43 45.2	57.72
23	15 1 45.99	S. 19 36 8.2	117.35	23	16 54 15.31	S. 26 49 31.5	56.12
MONDAY 30.				WEDNESDAY, NOV. 1.			
0	15 3 56.77	S. 19 47 52.3	116.43	0	16 56 45.48	S. 26 55 8.2	54.47
1	15 6 7.97	19 59 30.9	115.52				
2	15 8 19.59	20 11 4.0	114.57				
3	15 10 31.63	20 22 31.4	113.62				
4	15 12 44.09	20 33 53.1	112.63				
5	15 14 56.97	20 45 8.9	111.63				
6	15 17 10.28	20 56 18.7	110.65				
7	15 19 24.01	21 7 22.6	109.62				
8	15 21 38.16	21 18 20.3	108.58				
9	15 23 52.74	21 29 11.8	107.53				
10	15 26 7.74	21 39 57.0	106.45				
11	15 28 23.17	21 50 35.7	105.38				
12	15 30 39.03	22 1 8.0	104.28				
13	15 32 55.32	22 11 33.7	103.17				
14	15 35 12.03	22 21 52.7	102.02				
15	15 37 29.17	22 32 4.8	100.88				
16	15 39 46.74	22 42 10.1	99.72				
17	15 42 4.74	22 52 8.4	98.55				
18	15 44 23.16	23 1 59.7	97.33				
19	15 46 42.01	23 11 43.7	96.13				
20	15 49 1.29	23 21 20.5	94.90				
21	15 51 20.99	23 30 49.9	93.67				
22	15 53 41.11	23 40 11.9	92.40				
23	15 56 1.66	23 49 26.3	91.13				
24	15 58 22.63	S. 23 58 33.1					

PHASES OF THE MOON.

☾ First Quarter - ^d 6 ^h 19 ^m 13.0
 ○ Full Moon - - 13 11 14.8
 ☾ Last Quarter - 20 21 55.5
 ● New Moon - - 28 23 32.8

☾ Perigee - - - - - ^d 11 ^h 2
 ☾ Apogee - - - - - 22 22

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^b .	P. L. of diff.	VI ^b .	P. L. of diff.	IX ^b .	P. L. of diff.	
		° ' "		° ' "		° ' "		° ' "		
1	Antares E.	40 32 44	2793	38 58 7	2785	37 23 20	2777	35 48 22	2768	
	α Aquilæ E.	92 17 8	3636	90 59 12	3626	89 41 6	3618	88 22 51	3611	
2	SUN W.	30 43 29	3077	32 12 7	3066	33 40 58	3057	35 10 0	3048	
	Antares E.	27 50 49	2727	26 14 45	2719	24 38 31	2711	23 2 5	2703	
	α Aquilæ E.	81 50 7	3593	80 31 25	3592	79 12 42	3593	77 54 0	3595	
3	SUN W.	42 38 10	2999	44 8 24	2989	45 38 50	2979	47 9 29	2970	
	α Aquilæ E.	71 21 37	3628	70 3 33	3640	68 45 42	3653	67 28 5	3669	
	Fomalhaut E.	97 22 10	2852	95 48 49	2842	94 15 16	2832	92 41 30	2823	
4	SUN W.	54 45 50	2919	56 17 45	2909	57 49 52	2898	59 22 13	2888	
	Saturn W.	21 9 36	2698	22 46 19	2678	24 23 28	2660	26 1 1	2644	
	Mars W.	19 22 29	2834	20 56 13	2821	22 30 14	2809	24 4 30	2798	
	Venus W.	18 50 33	3006	20 20 39	2994	21 50 59	2982	23 21 34	2971	
	α Aquilæ E.	61 4 59	3785	59 49 41	3817	58 34 56	3852	57 20 47	3893	
	Fomalhaut E.	84 49 41	2778	83 14 45	2770	81 39 38	2763	80 4 21	2756	
5	SUN W.	67 7 17	2835	68 40 59	2825	70 14 54	2814	71 49 4	2803	
	Saturn W.	34 13 56	2574	35 53 27	2561	37 33 16	2549	39 13 21	2537	
	Mars W.	31 59 30	2743	33 35 13	2732	35 11 11	2721	36 47 23	2710	
	Venus W.	30 57 59	2916	32 29 58	2904	34 2 12	2893	35 34 40	2881	
	Antares W.	11 33 20	2515	13 14 12	2503	14 55 21	2492	16 36 46	2480	
	Fomalhaut E.	72 5 37	2722	70 29 27	2717	68 53 10	2713	67 16 47	2708	
	α Pegasi E.	93 29 8	2838	91 55 29	2827	90 21 36	2817	88 47 30	2807	
6	SUN W.	79 43 26	2749	81 19 1	2738	82 54 51	2726	84 30 56	2716	
	Saturn W.	47 37 53	2479	49 19 36	2467	51 1 35	2456	52 43 50	2445	
	Mars W.	44 52 0	2656	46 29 39	2645	48 7 33	2634	49 45 42	2623	
	Venus W.	43 20 37	2825	44 54 33	2814	46 28 43	2802	48 3 8	2791	
	Antares W.	25 7 40	2427	26 50 36	2417	28 33 47	2406	30 17 13	2396	
	Fomalhaut E.	59 13 40	2697	57 36 56	2697	56 0 12	2698	54 23 30	2701	
	α Pegasi E.	80 54 5	2767	79 18 54	2760	77 43 34	2755	76 8 7	2750	
7	SUN W.	92 35 1	2661	94 12 34	2649	95 50 22	2639	97 28 24	2629	
	Saturn W.	61 18 56	2391	63 2 43	2380	64 46 46	2370	66 31 4	2360	
	Mars W.	58 0 8	2569	59 39 45	2559	61 19 37	2548	62 59 44	2538	
	Venus W.	55 58 54	2735	57 34 48	2724	59 10 56	2713	60 47 19	2702	
	Antares W.	38 58 5	2344	40 43 0	2335	42 28 9	2324	44 13 34	2314	
	Fomalhaut E.	46 21 36	2741	44 45 51	2756	43 10 26	2775	41 35 25	2798	
	α Pegasi E.	68 9 33	2738	66 33 43	2738	64 57 53	2740	63 22 6	2743	
8	SUN W.	105 42 9	2577	107 21 36	2567	109 1 17	2557	110 41 11	2547	
	Saturn W.	75 16 12	2310	77 1 57	2301	78 47 55	2292	80 34 6	2283	
	Mars W.	71 23 51	2487	73 5 22	2477	74 47 7	2468	76 29 5	2458	
	Venus W.	68 52 50	2649	70 30 38	2639	72 8 40	2629	73 46 55	2619	
	Antares W.	53 4 11	2266	54 51 1	2257	56 38 4	2247	58 25 21	2239	
	Fomalhaut E.	33 49 56	2998	32 19 40	3066	30 50 49	3146	29 23 35	3244	
	α Pegasi E.	55 24 54	2784	53 50 5	2799	52 15 36	2817	50 41 30	2839	
	α Arietis E.	95 26 51	2317	93 41 16	2307	91 55 26	2298	90 9 23	2289	
9	SUN W.	119 3 53	2504	120 45 1	2496	122 26 20	2489	124 7 49	2481	
	Saturn W.	89 28 17	2241	91 15 43	2234	93 3 19	2227	94 51 6	2220	
	Mars W.	85 2 7	2416	86 45 19	2409	88 28 41	2401	90 12 14	2393	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		^o ⁱ ^{''}		^o ⁱ ^{''}		^o ⁱ ^{''}		^o ⁱ ^{''}	
1	Antares E.	34 13 13	2760	32 37 53	2753	31 2 23	2744	29 26 41	2786
	α Aquilæ E.	87 4 29	3605	85 46 0	3600	84 27 26	3597	83 8 48	3594
2	SUN W.	36 39 14	3038	38 8 40	3028	39 38 18	3018	41 8 8	3009
	Antares E.	21 25 29	2694	19 48 41	2686	18 11 43	2678	16 34 34	2670
	α Aquilæ E.	76 35 20	3599	75 16 45	3604	73 58 15	3611	72 39 52	3618
3	SUN W.	48 40 20	2960	50 11 23	2949	51 42 40	2940	53 14 8	2929
	α Aquilæ E.	66 10 45	3687	64 53 44	3707	63 37 4	3729	62 20 48	3755
	Fomalhaut E.	91 7 32	2813	89 33 21	2804	87 58 59	2796	86 24 26	2787
4	SUN W.	60 54 47	2878	62 27 34	2867	64 0 35	2857	65 33 49	2846
	Saturn W.	27 38 56	2629	29 17 12	2614	30 55 48	2600	32 34 43	2587
	Mars W.	25 39 1	2786	27 13 47	2775	28 48 47	2765	30 24 1	2754
	Venus W.	24 52 23	2961	26 23 25	2949	27 54 42	2938	29 26 13	2926
	α Aquilæ E.	56 7 20	3937	54 54 38	3987	53 42 46	4042	52 31 48	4104
	Fomalhaut E.	78 28 55	2748	76 53 19	2741	75 17 33	2734	73 41 39	2728
5	SUN W.	73 23 28	2792	74 58 6	2782	76 32 58	2771	78 8 4	2759
	Saturn W.	40 53 43	2525	42 34 21	2513	44 15 16	2502	45 56 26	2490
	Mars W.	38 23 49	2699	40 0 30	2689	41 37 25	2678	43 14 35	2666
	Venus W.	37 7 23	2870	38 40 20	2859	40 13 31	2848	41 46 57	2837
	Antares W.	18 18 27	2470	20 0 23	2459	21 42 34	2448	23 25 0	2438
	Fomalhaut E.	65 40 18	2704	64 3 44	2701	62 27 5	2699	60 50 23	2698
	α Pegasi E.	87 13 11	2798	85 38 41	2789	84 3 59	2782	82 29 7	2774
6	SUN W.	86 7 15	2704	87 43 50	2693	89 20 39	2682	90 57 43	2672
	Saturn W.	54 26 20	2434	56 9 6	2424	57 52 7	2412	59 35 24	2402
	Mars W.	51 24 6	2612	53 2 44	2601	54 41 37	2591	56 20 45	2580
	Venus W.	49 37 47	2779	51 12 42	2769	52 47 51	2757	54 23 15	2746
	Antares W.	32 0 53	2385	33 44 49	2375	35 29 0	2365	37 13 25	2355
	Fomalhaut E.	52 46 51	2705	51 10 18	2711	49 33 53	2719	47 57 38	2729
	α Pegasi E.	74 32 33	2745	72 56 53	2742	71 21 9	2740	69 45 22	2738
7	SUN W.	99 6 40	2618	100 45 11	2607	102 23 56	2596	104 2 56	2587
	Saturn W.	68 15 36	2350	70 0 23	2340	71 45 25	2330	73 30 41	2320
	Mars W.	64 40 5	2528	66 20 40	2517	68 1 30	2507	69 42 34	2497
	Venus W.	62 23 57	2691	64 0 49	2681	65 37 55	2670	67 15 15	2659
	Antares W.	45 59 13	2304	47 45 6	2294	49 31 14	2285	51 17 35	2275
	Fomalhaut E.	40 0 54	2825	38 26 58	2857	36 53 44	2896	35 21 20	2943
	α Pegasi E.	61 46 23	2747	60 10 46	2753	58 35 17	2762	56 59 59	2772
8	SUN W.	112 21 19	2538	114 1 39	2530	115 42 11	2520	117 22 56	2512
	Saturn W.	82 20 31	2274	84 7 9	2266	85 53 59	2257	87 22 49	2249
	Mars W.	78 11 17	2450	79 53 41	2441	81 36 18	2432	83 11 10	2424
	Venus W.	75 25 24	2610	77 4 6	2601	78 43	2592	80 1 11	2584
	Antares W.	60 12 51	2230	62 0 34	2222	63 48	2214	65 7 13	2206
	Fomalhaut E.	27 58 18	3363	26 35 19	3507	-	-	-	-
	α Pegasi E.	49 7 53	2863	47 34 47	2893	46	2885	44 1 41	2915
	α Arietis E.	88 23 7	2280	86 36 38	2272	84	2264	82 3 39	2256
9	SUN W.	125 49 29	2474	127 31 18	2466	-	-	-	-
	Saturn W.	96 39 3	2214	98 27 10	2208	100	2200	101 15 17	2192
	Mars W.	91 55 58	2387	93 39 51	2382	-	-	-	-

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	P. L. of diff.
9	Venus W.	82 1 24	2575	83 40 54	2567	85 20 34	2559	87 0 25	2551
	Antares W.	67 24 56	2198	69 13 27	2190	71 2 9	2184	72 51 1	2177
	α Pegasi E.	42 59 39	3012	41 29 41	3065	40 0 49	3128	38 33 13	3199
	α Arietis E.	81 16 4	2249	79 28 50	2243	77 41 26	2237	75 53 53	2231
10	Saturn W.	103 52 20	2193	105 40 58	2188	107 29 43	2185	109 18 33	2182
	Mars W.	98 52 20	2365	100 36 45	2360	102 21 17	2357	104 5 54	2353
	Venus W.	95 22 4	2521	97 2 48	2517	98 43 38	2512	100 24 35	2508
	Antares W.	81 57 46	2149	83 47 31	2144	85 37 23	2140	87 27 21	2136
	α Arietis E.	66 54 11	2209	65 5 57	2206	63 17 39	2204	61 29 18	2203
	Aldebaran E.	97 18 58	2205	95 30 38	2200	93 42 11	2196	91 53 38	2192
11	Mars W.	112 50 4	2343	114 35 1	2343	116 19 58	2343	118 4 55	2343
	Venus W.	108 50 23	2497	110 31 41	2497	112 12 59	2496	113 54 18	2497
	α Aquilæ W.	53 57 14	3559	55 16 33	3498	56 36 59	3441	57 58 29	3388
	Fomalhaut W.	- - -	- - -	- - -	- - -	24 13 49	3555	25 33 12	3373
	α Arietis E.	52 27 29	2209	50 39 15	2213	48 51 7	2218	47 3 6	2224
	Aldebaran E.	82 49 47	2183	81 0 54	2183	79 12 1	2184	77 23 9	2186
12	α Aquilæ W.	64 59 1	3200	66 25 10	3175	67 51 49	3153	69 18 54	3134
	Fomalhaut W.	32 51 59	2845	34 25 29	2785	36 0 17	2735	37 36 10	2693
	α Arietis E.	38 6 6	2278	36 19 35	2295	34 33 28	2315	32 47 50	2338
	Aldebaran E.	68 19 45	2203	66 31 22	2209	64 43 8	2216	62 55 4	2228
13	α Aquilæ W.	76 39 2	3080	78 7 36	3077	79 36 14	3075	81 4 54	3075
	Fomalhaut W.	45 46 58	2567	47 26 38	2553	49 6 37	2544	50 46 49	2536
	α Pegasi W.	29 53 2	3915	31 6 7	3747	32 22 4	3606	33 40 32	3487
	Aldebaran E.	53 57 54	2273	52 11 15	2286	50 24 55	2300	48 38 56	2315
	Pollux E.	97 21 39	2186	95 32 50	2194	93 44 13	2203	91 55 50	2213
14	α Aquilæ W.	88 27 11	3110	89 55 9	3121	91 22 53	3135	92 50 20	3152
	Fomalhaut W.	59 9 30	2529	60 50 3	2531	62 30 32	2536	64 10 55	2543
	α Pegasi W.	40 40 19	3115	42 8 11	3069	43 36 58	3032	45 6 31	3001
	Aldebaran E.	39 55 6	2412	38 11 48	2436	36 29 4	2462	34 46 57	2490
	Pollux E.	82 57 44	2268	81 10 57	2280	79 24 28	2293	77 38 18	2306
15	Fomalhaut W.	72 30 12	2588	74 9 23	2599	75 48 19	2612	77 26 58	2623
	α Pegasi W.	52 41 57	2913	54 14 0	2905	55 46 13	2900	57 18 32	2897
	Aldebaran E.	26 28 4	2696	24 51 18	2754	23 15 50	2825	21 41 55	2910
	Pollux E.	68 52 28	2378	67 8 21	2392	65 24 35	2408	63 41 12	2424
	Jupiter E.	118 2 45	2441	116 20 8	2455	114 37 52	2471	112 55 58	2487
16	Fomalhaut W.	85 35 32	2699	87 12 14	2715	88 48 34	2731	90 24 32	2748
	α Pegasi W.	65 0 17	2909	66 32 25	2915	68 4 25	2923	69 36 15	2931
	α Arietis W.	21 22 30	2890	22 55 2	2856	24 28 18	2832	26 2 4	2816
	Pollux E.	55 10 1	2506	53 28 56	2522	51 48 14	2540	50 7 56	2557
	Regulus E.	91 49 35	2514	90 8 41	2530	88 28 10	2548	86 48 3	2565
	Jupiter E.	104 32 7	2569	102 52 29	2586	101 13 15	2602	99 34 23	2620
17	α Pegasi W.	77 12 21	2986	78 42 51	2998	80 13 6	3012	81 43 4	3026
	α Arietis W.	33 54 6	2799	35 28 35	2804	37 2 58	2809	38 37 14	2817
	Pollux E.	41 52 17	2642	40 14 19	2659	38 36 44	2675	36 59 31	2692
	Regulus E.	78 33 16	2649	76 55 28	2666	75 18 2	2683	73 40 59	2699
	Jupiter E.	91 25 52	2705	89 49 18	2722	88 13 7	2738	86 37 18	2755

MEAN TIME.											
LUNAR DISTANCES.											
Day of the Month.	Star's Name and Position.		Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.	
9	Venus	W.	88 40 27	2545	90 20 38	2538	92 0 58	2532	93 41 27	2526	
	Antares	W.	74 40 4	2170	76 29 16	2164	78 18 38	2158	80 8 8	2153	
	α Pegasi	E.	37 7 3	3293	35 42 32	3283	34 19 56	3498	32 59 29	3633	
	α Arietis	E.	74 6 11	2225	72 18 21	2220	70 30 24	2216	68 42 20	2212	
10	Saturn	W.	111 7 28	2179	112 56 27	2177	114 45 30	2176	116 34 34	2175	
	Mars	W.	105 50 36	2350	107 35 23	2347	109 20 14	2345	111 5 8	2344	
	Venus	W.	102 5 37	2504	103 46 44	2502	105 27 54	2500	107 9 7	2498	
	Antares	W.	89 17 25	2134	91 7 33	2132	92 57 44	2129	94 47 59	2127	
	α Arietis	E.	59 40 55	2202	57 52 31	2203	56 4 8	2204	54 15 47	2206	
	Aldebaran	E.	90 4 59	2189	88 16 15	2186	86 27 27	2185	84 38 37	2185	
11	Mars	W.	119 49 52	2345	121 34 46	2346	123 19 38	2349	125 4 26	2352	
	Venus	W.	115 35 35	2499	117 16 50	2500	118 58 3	2502	120 39 13	2505	
	α Aquilæ	W.	59 20 59	3342	60 44 22	3301	62 8 33	3264	63 33 27	3230	
	Fomalhaut	W.	26 55 59	3224	28 21 40	3101	29 49 48	3001	31 20 0	2916	
	α Arietis	E.	45 15 15	2232	43 27 35	2241	41 40 8	2252	39 52 58	2264	
	Aldebaran	E.	75 34 20	2188	73 45 34	2190	71 56 52	2194	70 8 15	2198	
12	α Aquilæ	W.	70 46 23	3118	72 14 11	3104	73 42 16	3093	75 10 34	3085	
	Fomalhaut	W.	39 12 59	2658	40 50 35	2629	42 28 51	2604	44 7 40	2583	
	α Arietis	E.	31 2 46	2364	29 18 20	2396	27 34 39	2433	25 51 51	2477	
	Aldebaran	E.	61 7 11	2231	59 19 30	2240	57 32 2	2251	55 44 50	2262	
13	α Aquilæ	W.	82 33 34	3079	84 2 9	3083	85 30 39	3091	86 59 0	3099	
	Fomalhaut	W.	52 27 12	2531	54 7 42	2527	55 48 17	2526	57 28 54	2527	
	α Pegasi	W.	35 1 11	3386	36 23 43	3301	37 47 54	3228	39 13 30	3167	
	Aldebaran	E.	46 53 19	2332	45 8 6	2349	43 23 18	2368	41 38 57	2389	
	Pollux	E.	90 7 42	2223	88 19 48	2233	86 32 10	2245	84 44 49	2256	
14	α Aquilæ	W.	94 17 27	3169	95 44 13	3188	97 10 36	3209	98 36 35	3231	
	Fomalhaut	W.	65 51 9	2550	67 31 13	2558	69 11 6	2567	70 50 46	2577	
	α Pegasi	W.	46 36 42	2976	48 7 25	2954	49 38 36	2937	51 10 8	2924	
	Aldebaran	E.	33 5 30	2522	31 24 48	2559	29 44 56	2599	28 5 59	2644	
	Pollux	E.	75 52 27	2320	74 6 56	2334	72 21 46	2348	70 36 56	2363	
15	Fomalhaut	W.	79 5 19	2638	80 43 22	2653	82 21 5	2667	83 58 29	2683	
	α Pegasi	W.	58 50 55	2896	60 23 19	2897	61 55 42	2899	63 28 2	2903	
	Aldebaran	E.	20 9 49	3012	18 39 51	3138	- - -	- - -	- - -	- - -	
	Pollux	E.	61 58 12	2440	60 15 34	2457	58 33 20	2478	56 11 29	2490	
	Jupiter	E.	111 14 27	2503	109 33 18	2519	107 52 31	2535	105 2 7	2553	
16	Fomalhaut	W.	92 0 8	2765	93 35 22	2781	95 10 12	2801	96 38 28	2819	
	α Pegasi	W.	71 7 54	2941	72 39 21	2957	74 10 35	2977	75 35 29	2973	
	α Arietis	W.	27 36 11	2805	29 10 30	2821	30 45 1	2837	32 4 27	2797	
	Pollux	E.	48 28 2	2574	46 48 8	2590	45 9 23	2606	43 38 26	2625	
	Regulus	E.	85 8 20	2581	83 28 1	2597	81 50 1	2613	79 27 26	2632	
	Jupiter	E.	97 55 55	2636	96 17 46	2652	94 40 7	2668	92 48 26	2688	
17	α Pegasi	W.	83 12 45	3040	84 42 26	3056	86 11 1	3072	87 30 30	3084	
	α Arietis	W.	40 11 20	2825	41 41 31	2841	43 19 1	2857	44 38 28	2881	
	Pollux	E.	35 22 41	2709	33 42 10	2725	32 10 1	2741	30 22 27	2771	
	Regulus	E.	72 4 18	2716	70 4 18	2732	68 32 1	2748	66 32 27	2764	
	Jupiter	E.	85 1 51	2772	83 1 51	2788	81 51 1	2804	79 51 28	2820	

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	P. L. of diff.
18	α Arietis W.	46 25 51	2864	47 58 56	2874	49 31 48	2885	51 4 26	289
	Aldebaran W.	17 32 13	3430	18 53 56	3345	20 17 15	3232	21 41 47	323
	Pollux E.	28 59 0	2774	27 23 58	2790	25 49 17	2806	24 14 57	282
	Regulus E.	65 41 13	2781	64 6 20	2797	62 31 48	2811	60 57 35	282
	Jupiter E.	78 43 38	2836	77 9 57	2851	75 36 35	2866	74 3 33	288
	SUN E.	122 52 5	3121	121 24 21	3138	119 56 58	3154	118 29 54	317
19	α Arietis W.	58 44 1	2951	60 15 15	2962	61 46 15	2973	63 17 1	298
	Aldebaran W.	28 54 44	3123	30 22 26	3115	31 50 17	3110	33 18 14	310
	Regulus E.	53 11 20	2899	51 39 0	2913	50 6 57	2926	48 35 11	293
	Jupiter E.	66 23 7	2953	64 51 55	2966	63 20 59	2978	61 50 19	299
	SUN E.	111 19 17	3247	109 54 3	3260	108 29 5	3274	107 4 23	328
20	α Arietis W.	70 47 44	3031	72 17 18	3040	73 46 41	3048	75 15 54	305
	Aldebaran W.	40 38 37	3106	42 6 39	3109	43 34 38	3111	45 2 34	311
	Regulus E.	41 0 17	2999	39 30 3	3010	38 0 2	3021	36 30 15	303
	Jupiter E.	54 20 41	3047	52 51 26	3056	51 22 23	3066	49 53 32	307
	SUN E.	100 4 33	3346	98 41 15	3357	97 18 9	3367	95 55 15	337
21	α Arietis W.	82 39 43	3090	84 8 5	3096	85 36 20	3101	87 4 29	310
	Aldebaran W.	52 21 27	3128	53 49 3	3129	55 16 37	3132	56 44 8	313
	Regulus E.	29 4 33	3083	27 36 2	3093	26 7 44	3104	24 39 39	311
	Jupiter E.	42 31 48	3113	41 3 54	3119	39 36 8	3126	38 8 30	313
	SUN E.	89 3 13	3416	87 41 15	3423	86 19 24	3428	84 57 39	343
22	Aldebaran W.	64 1 11	3140	65 28 32	3141	66 55 52	3141	68 23 12	314
	Pollux W.	19 45 28	3082	21 14 0	3083	22 42 31	3083	24 11 2	308
	Jupiter E.	30 51 47	3153	29 24 41	3156	27 57 39	3160	26 30 42	316
	SUN E.	78 10 14	3452	76 48 56	3454	75 27 41	3455	74 6 27	345
23	Aldebaran W.	75 40 10	3133	77 7 40	3131	78 35 12	3128	80 2 48	312
	Pollux W.	31 33 43	3078	33 2 20	3076	34 30 59	3073	35 59 42	307
	SUN E.	67 20 26	3455	65 59 12	3453	64 37 55	3450	63 16 35	344
24	Aldebaran W.	87 21 57	3103	88 50 3	3098	90 18 15	3092	91 46 34	308
	Pollux W.	43 24 19	3050	44 53 30	3044	46 22 48	3038	47 52 13	303
	SUN E.	56 28 59	3427	55 7 13	3421	53 45 20	3416	52 23 21	340
25	Pollux W.	55 21 16	2998	56 51 31	2990	58 21 56	2982	59 52 31	297
	Regulus W.	19 2 54	3083	20 31 24	3065	22 0 17	3048	23 29 31	303
	SUN E.	45 31 30	3372	44 8 42	3364	42 45 44	3356	41 22 37	334
26	Pollux W.	67 28 7	2929	68 59 49	2919	70 31 44	2909	72 3 51	290
	Regulus W.	31 0 16	2964	32 31 14	2951	34 2 28	2939	35 33 58	292
	Jupiter W.	16 27 38	3035	17 57 7	3018	19 26 57	3003	20 57 6	298
	SUN E.	34 24 21	3299	33 0 8	3288	31 35 43	3279	30 11 7	326
27	Pollux W.	79 47 38	2848	81 21 3	2837	82 54 43	2827	84 28 36	281
	Regulus W.	43 15 17	2867	44 48 18	2855	46 21 34	2844	47 55 4	283
	Jupiter W.	28 32 12	2923	30 4 2	2911	31 36 7	2898	33 8 28	288
30	α Aquilæ E.	74 10 22	3532	72 50 33	3539	71 30 52	3548	70 11 21	356
31	SUN W.	24 43 56	2869	26 16 55	2860	27 50 5	2851	29 23 27	284
	α Aquilæ E.	63 37 48	3654	62 20 12	3631	61 3 5	3712	59 46 31	374
	Fomalhaut E.	88 0 46	2723	86 24 36	2715	84 48 16	2708	83 11 47	270

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
18	α Arietis W.	52 36 49 2908	54 8 58 2919	55 40 53 2930	57 12 34 2941				
	Aldebaran W.	23 7 14 3199	24 33 25 3172	26 0 8 3151	27 27 16 3134				
	Pollux E.	22 40 58 2838	21 7 19 2853	19 34 0 2869	18 1 1 2885				
	Regulus E.	59 23 42 2842	57 50 9 2856	56 16 54 2871	54 43 58 2885				
	Jupiter E.	72 30 51 2897	70 58 28 2911	69 26 23 2925	67 54 36 2939				
	Sun E.	117 3 10 3186	115 36 44 3203	114 10 38 3217	112 44 49 3231				
19	α Arietis W.	64 47 34 2993	66 17 55 3004	67 48 3 3014	69 17 59 3022				
	Aldebaran W.	34 46 16 3104	36 14 21 3103	37 42 27 3103	39 10 33 3105				
	Regulus E.	47 3 41 2951	45 32 27 2964	44 1 29 2976	42 30 46 2987				
	Jupiter E.	60 19 55 3002	58 49 45 3014	57 19 50 3026	55 50 9 3036				
	Sun E.	105 39 56 3300	104 15 44 3313	102 51 47 3324	101 28 3 3336				
20	α Arietis W.	76 44 58 3064	78 13 52 3071	79 42 37 3078	81 11 14 3084				
	Aldebaran W.	46 30 28 3116	47 58 18 3119	49 26 5 3122	50 53 48 3125				
	Regulus E.	35 0 41 3042	33 31 20 3052	32 2 12 3062	30 33 16 3073				
	Jupiter E.	48 24 51 3083	46 56 21 3092	45 28 1 3099	43 59 50 3106				
	Sun E.	94 32 31 3386	93 9 58 3394	91 47 34 3402	90 25 20 3408				
21	α Arietis W.	88 32 33 3110	90 0 31 3114	91 28 24 3116	92 56 14 3118				
	Aldebaran W.	58 11 36 3136	59 39 2 3138	61 6 26 3138	62 33 49 3139				
	Regulus E.	23 11 48 3127	21 44 11 3141	20 16 51 3156	18 49 49 3172				
	Jupiter E.	36 40 58 3136	35 13 32 3141	33 46 12 3145	32 18 57 3149				
	Sun E.	83 36 1 3438	82 14 27 3443	80 52 59 3446	79 31 34 3450				
22	Aldebaran W.	69 50 33 3138	71 17 56 3138	72 45 19 3137	74 12 43 3135				
	Pollux W.	25 39 32 3082	27 8 4 3082	28 36 35 3081	30 5 8 3079				
	Jupiter E.	25 3 48 3165	23 36 57 3168	22 10 9 3171	20 43 25 3175				
	Sun E.	72 45 15 3457	71 24 3 3458	70 2 52 3456	68 41 39 3456				
23	Aldebaran W.	81 30 29 3120	82 58 14 3117	84 26 3 3113	85 53 57 3108				
	Pollux W.	37 28 28 3067	38 57 18 3063	40 26 13 3059	41 55 13 3054				
	Sun E.	61 55 13 3444	60 33 46 3440	59 12 15 3437	57 50 40 3431				
24	Aldebaran W.	93 14 59 3081	94 43 32 3074	96 12 13 3068	97 41 2 3061				
	Pollux W.	49 21 45 3026	50 51 25 3020	52 21 13 3013	53 51 10 3006				
	Sun E.	51 1 15 3402	49 39 1 3395	48 16 39 3388	46 54 9 3380				
25	Pollux W.	61 23 16 2966	62 54 12 2957	64 25 19 2948	65 56 37 2939				
	Regulus W.	24 59 4 3016	26 28 57 3002	27 59 7 2989	29 29 33 2976				
	Sun E.	39 59 19 3338	38 35 51 3328	37 12 12 3319	35 48 22 3309				
26	Pollux W.	73 36 10 2889	75 8 43 2880	76 41 28 2870	78 14 26 2859				
	Regulus W.	37 5 44 2914	38 37 45 2903	40 10 0 2891	41 42 31 2879				
	Jupiter W.	22 27 34 2974	23 58 19 2961	25 29 20 2948	27 0 38 2935				
	Sun E.	28 46 18 3258	27 21 17 3247	25 56 3 3237	24 30 37 3225				
27	Pollux W.	86 2 43 2806	87 37 3 2794	89 11 39 2784	90 73 2781				
	Regulus W.	49 28 50 2820	51 2 52 2810	52 37 7 2801					
	Jupiter W.	34 41 4 2875	36 13 55 2863	37 47 2 2851					
30	α Aquilæ E.	68 52 3 3574	67 33 0 3590	66 14 15					
31	Sun W.	30 57 0 2833	32 30 45 2825	34 4					
	α Aquilæ E.	58 30 34 3787	57 15 18 3829	56 0					
	Fomalhaut E.	81 35 9 2696	79 58 23 2690	78 2					

CONFIGURATIONS OF THE SATELLITES OF JUPITER.

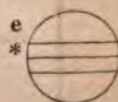
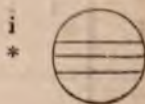
At 16^h 30^m, MEAN TIME.

Day of the Month.	<i>West.</i>				<i>East.</i>			
1		4	2	1	○		3	
2				4	○	1	3	
3	● 1			3	○	4	2	
4	○ 2	3		1	○		4	
5		3	2		○	1		4
6	3 ●		1		○	2		4
7					○	1 2 3		4
8			2 1		○		3	4
9			2		○	1	3	4
10			3 1		○		4	
11		3		4	○ 2			1 ○
12		3 4 2			○	1		
13		4		1 3	○ 2			
14	4				○	1 3	2	
15	4			1 2	○		3	
16	4		2		○	1	3	
17		4		1	○	2		3 ○
18			3 4		○ 1	2		
19	● 4	3	2		○ 1			
20	● 2		3 1		○	4		
21					○	1 3 2		4
22			1 2		○		3	4
23			2		○	1	3	4
24				1	○ 3	2		4
25		3			○	1 2		4
26	● 1	3	2		○		4	
27			3	2	○		4	
28				4	○	3	2	
29	2 ○		4	1	○		3	
30		4		2	○	1	3	
31		4		1	○	3 2		

This Table represents, at 16^h 30^m after *Mean Noon* of each day of the month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

ECLIPSES OF THE SATELLITES OF JUPITER.

SATELLITE.	Day of the Month.	Mean Time.	Sidereal Time.	PHASE as seen in an inverting Telescope.
I.	1	^h 20 ^m 24 ^s 33.2	^h 9 ^m 7 ^s 56.7	Im.
	3	14 52 59.9	3 43 22.1	Im.
	5	9 21 31.2	22 18 52.0	Im.
	7	3 49 57.0	16 54 16.4	Im.
	8	22 18 26.8	11 29 44.9	Im.
	10*	16 46 52.6	6 5 9.4	Im.
	12	11 15 21.7	0 40 37.1	Im.
	14	5 43 46.9	19 16 0.9	Im.
	16	0 12 16.0	13 51 28.6	Im.
	17	18 40 39.9	8 26 51.2	Im.
	19	13 9 7.8	3 2 17.7	Im.
	21	7 37 31.5	21 37 40.1	Im.
	23	2 5 59.1	16 13 6.4	Im.
	24	20 34 22.6	10 48 28.4	Im.
	26*	15 2 49.4	5 23 53.9	Im.
	28	9 31 11.4	23 59 14.5	Im.
	30	3 59 38.2	18 34 39.9	Im.
	31	22 27 59.6	13 10 0.0	Im.
II.	2	20 8 56.9	8 56 14.4	Im.
	6	9 25 37.9	22 26 55.9	Im.
	9	22 42 18.9	11 57 37.5	Im.
	13	11 58 59.3	1 28 18.3	Im.
	17	1 15 39.5	14 58 59.2	Im.
	20	14 32 20.7	4 29 40.9	Im.
	24	3 49 1.8	18 0 22.5	Im.
	27*	17 5 43.0	7 31 4.2	Im.
	31	6 22 24.4	21 1 46.2	Im.
III.	6*	15 46 48.2	4 49 8.8	Im.
	13	19 45 26.0	9 16 1.7	Im.
	20	23 43 21.9	13 42 12.6	Im.
	21	3 10 33.1	17 9 57.8	Em.
	28	3 41 2.6	18 8 8.2	Im.
	28	7 7 51.8	21 35 31.4	Em.
IV.	2	18 25 24.2	7 12 24.6	Im.
	2	22 58 25.4	11 46 10.8	Em.
	19	12 23 39.4	2 16 41.9	Im.
	19*	16 53 52.0	6 47 38.8	Em.



APPROXIMATE SIDEREAL TIMES
OF THE
OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER,
AND OF THE
TRANSITS OF THE SATELLITES AND THEIR SHADOWS
OVER THE DISC OF THE PLANET.

Satellite.	OCCULTATIONS.		TRANSITS OF SATELLITES.		TRANSITS OF SHADOWS.	
	Immersion.	Emersion.	Ingress.	Egress.	Ingress.	Egress.
	d h m	d h m	d h m	d h m	d h m	d h m
I.		1 12 5	0 12 24	1 14 44	0 11 46	1 14 6
		3 6 42	2 7 1	2 9 21	2 6 21	2 8 41
		5 1 19	4 1 38	4 3 58	4 0 57	4 3 17
		7 19 56	6 20 15	6 22 35	6 19 32	6 21 52
		9 14 33	8 14 52	8 17 12	8 14 7	8 16 27
	In	10 9 10	9 9 28	9 11 48	9 8 42	9 11 2
		12 3 47	11 4 5	11* 6 25	11 3 18	11* 5 38
	the	14 22 24	13 22 42	13 1 2	13 21 53	13 0 13
		16 17 0	15 17 18	15 19 38	15 16 28	15 18 48
	Shadow.	17 11 37	16 11 55	17 14 15	16 11 3	16 13 23
		19* 6 14	18* 6 32	18 8 52	18* 5 39	18 7 59
		21 0 50	20 1 8	20 3 28	20 0 14	20 2 34
		23 19 27	22 19 45	22 22 5	22 18 49	22 21 9
		24 14 4	24 14 22	24 16 41	23 13 24	24 15 44
		26 8 40	25 8 58	25 11 18	25* 8 0	25 10 20
		28 3 17	27 3 34	27* 5 54	27 2 35	27 4 55
		30 21 53	29 22 11	29 0 30	29 21 10	29 23 30
			31 16 47	31 19 7	31 15 46	31 18 5
II.		3 13 6	1 15 36	1 18 29	1 14 19	1 17 13
		6 2 43	4* 5 14	4 8 7	4 3 51	4 6 45
	In	10 16 19	8 18 52	8 21 45	8 17 23	8 20 17
		13* 5 55	11 8 30	11 11 22	11 6 55	11 9 49
	the	17 19 31	15 22 8	15 1 0	15 20 28	15 23 21
		20 9 7	18 11 45	19 14 37	18 9 59	18 12 53
	Shadow.	24 22 43	22 1 23	22 4 14	22 23 31	22 2 25
		27 12 18	26 14 59	26 17 50	25 13 3	26 15 56
		31 1 53	29 4 36	29* 7 27	29 2 35	29* 5 28
III.	In the Shadow.	6 11 19	3 17 6	3 20 43	3 14 22	3 18 0
		14 16 8	10 21 56	10 1 33	10 18 47	10 22 25
	21 17 21	21 20 56	17 2 45	17* 6 21	17 23 13	17 2 51
	28 22 7	28 1 41	24* 7 33	24 11 7	24 3 40	24* 7 17
			31 12 18	32 15 51	31* 8 6	31 11 42
IV.	3 13 30	3 18 14	11 22 17	11 2 57	11 14 49	11 19 33
	19 10 44	20 15 20	28 19 19	28 23 50	27 9 53	28 14 34

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^h .77839 ^s .	From Mean Noon of January 1.	
	At Mean Midnight,						Day of the Year.	Fraction of the Year.
	Logarithm of							
	A	B	C	D		Days.		
1	+1.2664	+0.4825	+9.7850	-0.9526	^h 11 ^m 18 ^s 6.28	192	273	.747
2	1.2652	0.5293	9.7866	0.9525	11 14 10.38	193	274	.750
3	1.2639	0.5715	9.7882	0.9523	11 10 14.47	194	275	.753
4	+1.2624	+0.6099	+9.7897	-0.9521	11 6 18.56	195	276	.756
5	1.2608	0.6450	9.7913	0.9519	11 2 22.65	196	277	.758
6	1.2591	0.6774	9.7929	0.9517	10 58 26.73	197	278	.761
7	+1.2572	+0.7074	+9.7945	-0.9514	10 54 30.82	198	279	.764
8	1.2552	0.7354	9.7961	0.9511	10 50 34.91	199	280	.767
9	1.2531	0.7616	9.7977	0.9508	10 46 39.00	200	281	.769
10	+1.2508	+0.7862	+9.7993	-0.9504	10 42 43.09	201	282	.772
11	1.2484	0.8093	9.8009	0.9500	10 38 47.19	202	283	.775
12	1.2458	0.8312	9.8025	0.9496	10 34 51.28	203	284	.778
13	+1.2431	+0.8519	+9.8041	-0.9492	10 30 55.38	204	285	.780
14	1.2402	0.8716	9.8057	0.9487	10 26 59.48	205	286	.783
15	1.2372	0.8903	9.8073	0.9482	10 23 3.57	206	287	.786
16	+1.2340	+0.9081	+9.8090	-0.9477	10 19 7.66	207	288	.789
17	1.2306	0.9251	9.8106	0.9472	10 15 11.75	208	289	.791
18	1.2271	0.9413	9.8123	0.9466	10 11 15.84	209	290	.794
19	+1.2234	+0.9568	+9.8139	-0.9460	10 7 19.92	210	291	.797
20	1.2196	0.9717	9.8156	0.9454	10 3 24.01	211	292	.799
21	1.2156	0.9860	9.8173	0.9448	9 59 28.10	212	293	.802
22	+1.2114	+0.9997	+9.8190	-0.9442	9 55 32.18	213	294	.805
23	1.2071	1.0128	9.8207	0.9435	9 51 36.28	214	295	.808
24	1.2026	1.0254	9.8224	0.9428	9 47 40.37	215	296	.810
25	+1.1979	+1.0376	+9.8241	-0.9422	9 43 44.47	216	297	.813
26	1.1930	1.0493	9.8259	0.9415	9 39 48.56	217		.816
27	1.1879	1.0606	9.8276	0.9407	9 35 52.66			.819
28	+1.1826	+1.0715	+9.8293	-0.9400	9 31 56.7			
29	1.1771	1.0820	9.8311	0.9392	9 28 0			
30	1.1714	1.0921	9.8329	0.9385	9 24 4			
31	1.1655	1.1019	9.8347	0.9377	9 20 9			
32	+1.1594	+1.1113	+9.8365	-0.9369	9 16 1			

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	["]
Wed.	1	14 25 57.04	9.824	S. 14 28 20.9	47.84	1 6.90	16 15.81	0.033
Thur.	2	14 29 52.81	9.857	14 47 29.0	47.23	1 7.01	16 16.60	0.006
Frid.	3	14 33 49.38	9.890	15 6 22.5	46.61	1 7.13	16 16.59	0.034
Sat.	4	14 37 46.75	9.925	15 25 1.1	45.97	1 7.24	16 15.78	0.068
Sun.	5	14 41 44.94	9.958	15 43 24.4	45.31	1 7.36	16 14.16	0.101
Mon.	6	14 45 43.93	9.992	16 1 31.8	44.63	1 7.48	16 11.73	0.135
Tues.	7	14 49 43.73	10.025	16 19 23.0	43.95	1 7.59	16 8.49	0.169
Wed.	8	14 53 44.34	10.061	16 36 57.7	43.24	1 7.71	16 4.44	0.204
Thur.	9	14 57 45.80	10.096	16 54 15.5	42.51	1 7.83	15 59.54	0.239
Frid.	10	15 1 48.10	10.131	17 11 15.8	41.78	1 7.95	15 53.81	0.274
Sat.	11	15 5 51.24	10.166	17 27 58.5	41.03	1 8.07	15 47.24	0.308
Sun.	12	15 9 55.22	10.201	17 44 23.1	40.25	1 8.19	15 39.84	0.344
Mon.	13	15 14 0.05	10.238	18 0 29.2	39.48	1 8.30	15 31.58	0.380
Tues.	14	15 18 5.75	10.273	18 16 16.6	38.67	1 8.42	15 22.47	0.415
Wed.	15	15 22 12.29	10.308	18 31 44.7	37.85	1 8.54	15 12.52	0.450
Thur.	16	15 26 19.69	10.344	18 46 53.2	37.03	1 8.65	15 1.71	0.486
Frid.	17	15 30 27.95	10.380	19 1 41.9	36.18	1 8.77	14 50.04	0.521
Sat.	18	15 34 37.06	10.414	19 16 10.2	35.32	1 8.88	14 37.53	0.556
Sun.	19	15 38 47.00	10.450	19 30 17.8	34.44	1 9.00	14 24.19	0.592
Mon.	20	15 42 57.79	10.484	19 44 4.3	33.54	1 9.11	14 9.99	0.626
Tues.	21	15 47 9.40	10.518	19 57 29.2	32.63	1 9.22	13 54.97	0.660
Wed.	22	15 51 21.83	10.552	20 10 32.4	31.71	1 9.33	13 39.14	0.694
Thur.	23	15 55 35.08	10.586	20 23 13.4	30.76	1 9.44	13 22.49	0.728
Frid.	24	15 59 49.14	10.618	20 35 31.7	29.81	1 9.55	13 5.03	0.759
Sat.	25	16 4 3.98	10.650	20 47 27.1	28.84	1 9.65	12 46.81	0.791
Sun.	26	16 8 19.57	10.681	20 58 59.2	27.85	1 9.75	12 27.82	0.822
Mon.	27	16 12 35.91	10.711	21 10 7.6	26.85	1 9.85	12 8.09	0.853
Tues.	28	16 16 52.98	10.741	21 20 52.1	25.84	1 9.95	11 47.63	0.881
Wed.	29	16 21 10.76	10.768	21 31 12.2	24.81	1 10.04	11 26.48	0.909
Thur.	30	16 25 29.20	10.796	21 41 7.7	23.78	1 10.13	11 4.66	0.937
Frid.	31	16 29 48.31		S. 21 50 38.3		1 10.22	10 42.17	

* Mean Time of the Semidiameter passing may be found by subtracting 0^s 19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
		Right Ascension.	Declination.	Semidiam.*		
		h m s	° ' "	' "	m s	h m s
Wed.	1	14 25 59.70	S. 14 28 34.0	16 8.9	16 15.82	14 42 15.52
Thur.	2	14 29 55.48	14 47 41.9	16 9.2	16 16.60	14 46 12.08
Frid.	3	14 33 52.06	15 6 35.2	16 9.4	16 16.58	14 50 8.64
Sat.	4	14 37 49.44	15 25 13.7	16 9.7	16 15.76	14 54 5.20
Sun.	5	14 41 47.63	15 43 36.7	16 9.9	16 14.13	14 58 1.76
Mon.	6	14 45 46.62	16 1 43.9	16 10.1	16 11.69	15 1 58.31
Tues.	7	14 49 46.42	16 19 34.9	16 10.4	16 8.45	15 5 54.87
Wed.	8	14 53 47.03	16 37 9.4	16 10.6	16 4.39	15 9 51.42
Thur.	9	14 57 48.49	16 54 26.9	16 10.9	15 59.48	15 13 47.97
Frid.	10	15 1 50.78	17 11 27.0	16 11.1	15 53.74	15 17 44.52
Sat.	11	15 5 53.91	17 28 9.4	16 11.3	15 47.16	15 21 41.07
Sun.	12	15 9 57.88	17 44 33.7	16 11.5	15 39.75	15 25 37.63
Mon.	13	15 14 2.70	18 0 39.6	16 11.8	15 31.49	15 29 34.19
Tues.	14	15 18 8.38	18 16 26.6	16 12.0	15 22.37	15 33 30.75
Wed.	15	15 22 14.90	18 31 54.4	16 12.2	15 12.41	15 37 27.31
Thur.	16	15 26 22.28	18 47 2.6	16 12.4	15 1.59	15 41 23.87
Frid.	17	15 30 30.51	19 1 51.0	16 12.6	14 49.92	15 45 20.43
Sat.	18	15 34 39.59	19 16 18.9	16 12.8	14 37.40	15 49 16.99
Sun.	19	15 38 49.50	19 30 26.1	16 13.0	14 24.05	15 53 13.55
Mon.	20	15 43 0.26	19 44 12.3	16 13.1	14 9.85	15 57 10.11
Tues.	21	15 47 11.84	19 57 36.9	16 13.3	13 54.82	16 1 6.66
Wed.	22	15 51 24.23	20 10 39.7	16 13.5	13 38.99	16 5 3.22
Thur.	23	15 55 37.44	20 23 20.3	16 13.7	13 22.33	16 8 59.77
Frid.	24	15 59 51.45	20 35 38.3	16 13.8	13 6.27	16 12 56.32
Sat.	25	16 4 6.24	20 47 33.4	16 14		16 52.88
Sun.	26	16 8 21.78	20 59 5.0	16		20 49.43
Mon.	27	16 12 38.07	21 10 13.2	16		24 45.99
Tues.	28	16 16 55.09	21 20 57.3	16		42.55
Wed.	29	16 21 12.81	21 31 17.1			39.12
Thur.	30	16 25 31.19	21 41 12.2			25.68
Frid.	31	16 29 50.24	S. 21 50 42.5			2

* The Semidiameter for Apparent Noon may

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	218 53 25.4	S. 0° 56'	9.9963931	15 46.5	15 49.8	57 53.4	58 5
2	219 53 34.8	0° 63'	9.9962810	15 52.9	15 55.8	58 16.9	58 27.6
3	220 53 45.7	0° 66'	9.9961696	15 58.4	16 0.7	58 37.0	58 45.6
4	221 53 58.3	0° 66'	9.9960590	16 2.9	16 4.8	58 53.5	59 0.6
5	222 54 12.4	0° 64'	9.9959493	16 6.4	16 7.8	59 6.4	59 11.4
6	223 54 27.8	0° 58'	9.9958409	16 8.9	16 9.7	59 15.6	59 18.4
7	224 54 44.5	0° 50'	9.9957337	16 10.1	16 10.0	59 19.9	59 19.7
8	225 55 2.7	0° 40'	9.9956278	16 9.5	16 8.6	59 17.9	59 14.5
9	226 55 22.5	0° 28'	9.9955238	16 7.1	16 5.0	59 8.9	59 1.2
10	227 55 43.7	0° 15'	9.9954216	16 2.3	15 59.1	58 51.4	58 39.6
11	228 56 6.5	S. 0° 02'	9.9953212	15 55.4	15 51.2	58 26.0	58 10.6
12	229 56 30.9	N. 0° 10'	9.9952227	15 46.6	15 41.6	57 53.7	57 35.5
13	230 56 56.9	0° 21'	9.9951263	15 36.4	15 31.1	57 16.5	56 56.8
14	231 57 24.7	0° 30'	9.9950319	15 25.6	15 20.2	56 36.7	56 16.8
15	232 57 54.0	0° 37'	9.9949394	15 14.9	15 9.9	55 57.6	55 39.0
16	233 58 25.0	0° 41'	9.9948490	15 5.1	15 0.8	55 21.5	55 5.5
17	234 58 57.9	0° 42'	9.9947605	14 56.8	14 53.5	54 51.2	54 38.8
18	235 59 32.4	0° 39'	9.9946741	14 50.7	14 48.6	54 28.7	54 21.0
19	237 0 8.6	0° 35'	9.9945894	14 47.2	14 46.4	54 15.7	54 13.0
20	238 0 46.5	0° 27'	9.9945066	14 46.4	14 47.1	54 13.0	54 15.5
21	239 1 26.1	0° 16'	9.9944254	14 48.5	14 50.7	54 20.7	54 28.6
22	240 2 7.3	N. 0° 05'	9.9943458	14 53.5	14 57.0	54 39.0	54 51.7
23	241 2 50.2	S. 0° 09'	9.9942676	15 0.9	15 5.5	55 6.2	55 23.0
24	242 3 34.7	0° 23'	9.9941906	15 10.5	15 15.8	55 41.2	56 0.6
25	243 4 20.8	0° 36'	9.9941149	15 21.3	15 27.0	56 20.9	56 41.8
26	244 5 8.1	0° 49'	9.9940404	15 32.7	15 38.3	57 2.7	57 23.4
27	245 5 57.0	0° 61'	9.9939671	15 43.8	15 49.0	57 43.5	58 2.4
28	246 6 47.2	0° 70'	9.9938950	15 53.7	15 58.0	58 19.9	58 35.7
29	247 7 38.5	0° 77'	9.9938242	16 1.7	16 4.9	58 49.3	59 1.0
30	248 8 30.8	0° 81'	9.9937547	16 7.5	16 9.4	59 10.4	59 17.3
31	249 9 24.2	S. 0° 81'	9.9936867	16 10.6	16 11.4	59 22.0	59 24.8

MEAN TIME.

Day of the Week.	Day of the Month.	THE MOON'S													
		Longitude.						Latitude.				Age.	Meridian		
		Noon.			Midnight.			Noon.		Midnight.		Noon.	Passage.		
Wed.	1	255	54	3.6	262	43	38.8	S. 4	13	38.7	S. 4	34	4.0	3.0	2 20.0
Thur.	2	269	36	1.0	276	30	56.7	4	50	41.8	5	3	12.4	4.0	3 20.1
Frid.	3	283	28	11.0	290	27	30.0	5	11	20.9	5	14	55.1	5.0	4 21.4
Sat.	4	297	28	38.2	304	31	23.2	5	13	49.3	5	7	59.9	6.0	5 21.3
Sun.	5	311	35	29.9	318	40	43.9	4	57	30.1	4	42	26.8	7.0	6 18.2
Mon.	6	325	46	51.1	332	53	35.5	4	23	2.6	3	59	33.5	8.0	7 11.4
Tues.	7	340	0	40.9	347	7	48.9	3	32	21.4	3	1	52.0	9.0	8 1.7
Wed.	8	354	14	40.1	1	20	53.2	2	28	35.1	1	53	3.6	10.0	8 50.0
Thur.	9	8	26	5.0	15	29	51.5	S. 1	15	53.0	S. 0	37	41.3	11.0	9 37.7
Frid.	10	22	31	46.8	29	31	24.5	N. 0	0	53.7	N. 0	39	13.2	12.0	10 26.1
Sat.	11	36	28	19.1	43	22	4.6	1	16	41.6	1	52	42.5	13.0	11 16.1
Sun.	12	50	12	17.8	56	58	36.8	2	26	45.3	2	58	21.6	14.0	12 8.5
Mon.	13	63	40	44.4	70	18	26.6	3	27	8.4	3	52	45.3	15.0	13 3.0
Tues.	14	76	51	34.0	83	20	2.3	4	14	59.1	4	33	37.8	16.0	13 58.9
Wed.	15	89	43	52.6	96	3	10.6	4	48	36.4	4	59	50.7	17.0	14 54.4
Thur.	16	102	18	8.5	108	29	1.4	5	7	22.2	5	11	12.3	18.0	15 47.9
Frid.	17	114	36	11.4	120	40	2.5	5	11	26.4	5	8	10.0	19.0	16 38.3
Sat.	18	126	41	3.4	132	39	45.5	5	1	30.8	4	51	36.8	20.0	17 25.1
Sun.	19	138	36	42.9	144	32	30.6	4	38	36.6	4	22	39.7	21.0	18 8.9
Mon.	20	150	27	46.5	156	23	7.8	4	3	55.5	3	42	34.5	22.0	18 50.4
Tues.	21	162	19	13.8	168	16	42.2	3	18	47.2	2	52	45.5	23.0	19 30.5
Wed.	22	174	16	11.0	180	18	16.1	2	24	42.1	1	54	50.7	24.0	20 10.4
Thur.	23	186	23	32.2	192	32	30.9	1	23	26.3	N. 0	50	46.4	25.0	20 51.4
Frid.	24	198	45	42.2	205	3	28.6	N. 0	17	9.5	S. 0	17	2.1	26.0	21 34.6
Sat.	25	211	26	10.5	217	54	1.8	S. 0	51	25.7	1	25	34.7	27.0	22 21.4
Sun.	26	224	27	11.1	231	5	38.4	1	59	1.5	2	31	16.1	28.0	23 12.8
Mon.	27	237	49	18.3	244	37	57.4	3	1	47.2	3	30	3.5	29.0	♂
Tues.	28	251	31	16.0	258	28	47.1	3	55	34.8	4	17	50.0		0 9.2
Wed.	29	265	29	59.1	272	34	16.5	4	36	2.3	4	50	50.4		1 9.9
Thur.	30	279	40	59.4	286	49	28.6	5	0		5	6	17.6		2 12.8
Frid.	31	293	59	3.9	301	9	7.8	S. 5			S. 5	2	45		3 14.8

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 1.				FRIDAY 3.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	16 56 45.48	S. 26 55 8.2	54.47	0	19 0 53.70	S. 27 56 31.9	32.50
1	16 59 16.00	27 0 35.0	52.83	1	19 3 30.21	27 53 16.9	34.37
2	17 1 46.83	27 5 52.0	51.17	2	19 6 6.62	27 49 50.7	36.20
3	17 4 17.97	27 10 59.0	49.52	3	19 8 42.93	27 46 13.5	38.03
4	17 6 49.43	27 15 56.1	47.83	4	19 11 19.11	27 42 25.2	39.90
5	17 9 21.18	27 20 43.1	46.13	5	19 13 55.16	27 38 25.8	41.72
6	17 11 53.23	27 25 19.9	44.43	6	19 16 31.08	27 34 15.5	43.57
7	17 14 25.56	27 29 46.5	42.73	7	19 19 6.86	27 29 54.1	45.37
8	17 16 58.17	27 34 2.9	41.02	8	19 21 42.48	27 25 21.9	47.18
9	17 19 31.05	27 38 9.0	39.28	9	19 24 17.94	27 20 38.8	49.00
10	17 22 4.20	27 42 4.7	37.53	10	19 26 53.24	27 15 44.8	50.80
11	17 24 37.60	27 45 49.9	35.80	11	19 29 28.36	27 10 40.0	52.60
12	17 27 11.25	27 49 24.7	34.03	12	19 32 3.29	27 5 24.4	54.38
13	17 29 45.14	27 52 48.9	32.28	13	19 34 38.03	26 59 58.1	56.15
14	17 32 19.27	27 56 2.6	30.50	14	19 37 12.57	26 54 21.2	57.92
15	17 34 53.62	27 59 5.6	28.70	15	19 39 46.91	26 48 33.7	59.68
16	17 37 28.19	28 1 57.8	26.93	16	19 42 21.03	26 42 35.6	61.45
17	17 40 2.96	28 4 39.4	25.12	17	19 44 54.93	26 36 26.9	63.17
18	17 42 37.93	28 7 10.1	23.32	18	19 47 28.60	26 30 7.9	64.92
19	17 45 13.09	28 9 30.0	21.50	19	19 50 2.05	26 23 38.4	66.66
20	17 47 48.44	28 11 39.0	19.70	20	19 52 35.25	26 16 58.5	68.38
21	17 50 23.95	28 13 37.2	17.85	21	19 55 8.22	26 10 8.4	70.07
22	17 52 59.63	28 15 24.3	16.08	22	19 57 40.93	26 3 8.0	71.75
23	17 55 35.46	S. 28 17 0.5	14.18	23	20 0 13.38	S. 25 55 57.5	73.45
THURSDAY 2.				SATURDAY 4.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	17 58 11.43	S. 28 18 25.6	12.33	0	20 2 45.58	S. 25 48 36.8	75.12
1	18 0 47.55	28 19 39.6	10.50	1	20 5 17.51	25 41 6.1	76.78
2	18 3 23.79	28 20 42.6	8.63	2	20 7 49.16	25 33 25.4	78.43
3	18 6 0.15	28 21 34.4	6.80	3	20 10 20.53	25 25 34.8	80.08
4	18 8 36.61	28 22 15.2	4.92	4	20 12 51.63	25 17 34.3	81.70
5	18 11 13.17	28 22 44.7	3.07	5	20 15 22.44	25 9 24.1	83.30
6	18 13 49.83	28 23 3.1	1.18	6	20 17 52.96	25 1 4.3	84.93
7	18 16 26.56	28 23 10.2	0.67	7	20 20 23.18	24 52 34.7	86.50
8	18 19 3.36	28 23 6.2	2.55	8	20 22 53.10	24 43 55.7	88.08
9	18 21 40.22	28 22 50.9	4.42	9	20 25 22.72	24 35 7.2	89.65
10	18 24 17.13	28 22 24.4	6.30	10	20 27 52.03	24 26 9.3	91.22
11	18 26 54.08	28 21 46.6	8.17	11	20 30 21.04	24 17 2.0	92.73
12	18 29 31.06	28 20 57.6	10.05	12	20 32 49.73	24 7 45.6	94.27
13	18 32 8.06	28 19 57.3	11.92	13	20 35 18.10	23 58 20.0	95.77
14	18 34 45.07	28 18 45.8	13.80	14	20 37 46.15	23 48 45.4	97.28
15	18 37 22.09	28 17 23.0	15.68	15	20 40 13.88	23 39 1.7	98.75
16	18 39 59.09	28 15 48.9	17.55	16	20 42 41.29	23 29 9.2	100.23
17	18 42 36.08	28 14 3.6	19.43	17	20 45 8.36	23 19 7.8	101.68
18	18 45 13.04	28 12 7.0	21.30	18	20 47 35.11	23 8 57.7	103.12
19	18 47 49.96	28 9 59.2	23.17	19	20 50 1.53	22 58 39.0	104.55
20	18 50 26.84	28 7 40.2	25.05	20	20 52 27.62	22 48 11.7	105.97
21	18 53 3.66	28 5 9.9	26.92	21	20 54 53.37	22 37 35.9	107.37
22	18 55 40.42	28 2 28.4	28.77	22	20 57 18.78	22 26 51.7	108.75
23	18 58 17.10	27 59 35.8	30.65	23	20 59 43.86	22 15 59.2	110.12
24	19 0 53.70	S. 27 56 31.9		24	21 2 8.60	S. 22 4 58.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 5.				TUESDAY 7.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	21 2 8.60	S. 22 4 58.5	111.47	0	22 51 38.19	S. 11 5 49.4	158.05
1	21 4 33.00	21 53 49.7	112.82	1	22 53 48.22	10 50 1.1	158.63
2	21 6 57.06	21 42 32.8	114.13	2	22 55 58.03	10 34 9.3	159.18
3	21 9 20.78	21 31 8.0	115.45	3	22 58 7.62	10 18 14.2	159.75
4	21 11 44.17	21 19 35.3	116.73	4	23 0 17.01	10 2 15.7	160.27
5	21 14 7.21	21 7 54.9	118.02	5	23 2 26.20	9 46 14.1	160.80
6	21 16 29.91	20 56 6.8	119.28	6	23 4 35.19	9 30 9.3	161.28
7	21 18 52.28	20 44 11.1	120.53	7	23 6 43.98	9 14 1.6	161.78
8	21 21 14.30	20 32 7.9	121.77	8	23 8 52.58	8 57 50.9	162.25
9	21 23 35.99	20 19 57.3	122.97	9	23 11 1.00	8 41 37.4	162.70
10	21 25 57.34	20 7 39.5	124.18	10	23 13 9.24	8 25 21.2	163.13
11	21 28 18.35	19 55 14.4	125.37	11	23 15 17.31	8 9 2.4	163.57
12	21 30 39.02	19 42 42.2	126.53	12	23 17 25.20	7 52 41.0	163.97
13	21 32 59.36	19 30 3.0	127.68	13	23 19 32.93	7 36 17.2	164.37
14	21 35 19.37	19 17 16.9	128.82	14	23 21 40.50	7 19 51.0	164.73
15	21 37 39.05	19 4 24.0	129.95	15	23 23 47.92	7 3 22.6	165.10
16	21 39 58.39	18 51 24.3	131.05	16	23 25 55.19	6 46 52.0	165.43
17	21 42 17.41	18 38 18.0	132.15	17	23 28 2.31	6 30 19.4	165.77
18	21 44 36.10	18 25 5.1	133.22	18	23 30 9.29	6 13 44.8	166.08
19	21 46 54.47	18 11 45.8	134.28	19	23 32 16.14	5 57 8.3	166.38
20	21 49 12.51	17 58 20.1	135.33	20	23 34 22.86	5 40 30.0	166.67
21	21 51 30.23	17 44 48.1	136.35	21	23 36 29.45	5 23 50.0	166.92
22	21 53 47.63	17 31 10.0	137.35	22	23 38 35.93	5 7 8.5	167.18
23	21 56 4.72	S. 17 17 25.9	138.37	23	23 40 42.29	S. 4 50 25.4	167.42
MONDAY 6.				WEDNESDAY 8.			
0	21 58 21.49	S. 17 3 35.7	139.33	0	23 42 48.53	S. 4 33 40.9	167.63
1	22 0 37.95	16 49 39.7	140.32	1	23 44 54.67	4 16 55.1	167.83
2	22 2 54.10	16 35 37.8	141.25	2	23 47 0.72	4 0 8.1	168.03
3	22 5 9.94	16 21 30.3	142.18	3	23 49 6.67	3 43 19.9	168.20
4	22 7 25.49	16 7 17.2	143.10	4	23 51 12.53	3 26 30.7	168.35
5	22 9 40.73	15 52 58.6	144.00	5	23 53 18.31	3 9 40.6	168.50
6	22 11 55.68	15 38 34.6	144.88	6	23 55 24.01	2 52 49.6	168.63
7	22 14 10.33	15 24 5.3	145.75	7	23 57 29.63	2 35 57.8	168.73
8	22 16 24.70	15 9 30.8	146.60	8	23 59 35.19	2 19 5.4	168.83
9	22 18 38.77	14 54 51.2	147.45	9	0 1 40.68	2 2 12.4	168.92
10	22 20 52.57	14 40 6.5	148.25	10	0 3 46.12	1 45 18.9	168.98
11	22 23 6.09	14 25 17.0	149.07	11	0 5 51.50	1 28 25.0	169.03
12	22 25 19.33	14 10 22.6	149.85	12	0	1 1	169.07
13	22 27 32.30	13 55 23.5	150.62	13			169.08
14	22 29 45.01	13 40 19.8	151.37	14			169.08
15	22 31 57.45	13 25 11.6	152.12	15			169.08
16	22 34 9.63	13 9 58.9	152.83	16			169.05
17	22 36 21.55	12 54 41.9	153.53	17			169.00
18	22 38 33.22	12 39 20.7	154.23	18			168.95
19	22 40 44.65	12 23 55.3	154.92	19			168.88
20	22 42 55.83	12 8 25.8	155.57	20			168.78
21	22 45 6.77	11 52 52.4	156.20	21			168.65
22	22 47 17.47	11 37 15.2	156.81	22			168.50
23	22 49 27.94	11 21 34.1	157.42	23			168.33
24	22 51 38.19	S. 11 5 49.4		24			168.15

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
THURSDAY 9.				SATURDAY 11.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	0 32 58.91	N. 2 11 9.1	168.27	0	2 14 49.16	N. 14 53 48.3	143.18
1	0 35 4.08	2 27 58.7	168.12	1	2 17 0.21	15 8 7.4	142.30
2	0 37 9.27	2 44 47.4	167.93	2	2 19 11.47	15 22 21.2	141.38
3	0 39 14.49	3 1 35.0	167.73	3	2 21 22.93	15 36 29.5	140.48
4	0 41 19.74	3 18 21.4	167.52	4	2 23 34.60	15 50 32.4	139.53
5	0 43 25.02	3 35 6.5	167.28	5	2 25 46.49	16 4 29.6	138.60
6	0 45 30.35	3 51 50.2	167.05	6	2 27 58.58	16 18 21.2	137.65
7	0 47 35.72	4 8 32.5	166.80	7	2 30 10.90	16 32 7.1	136.67
8	0 49 41.15	4 25 13.3	166.52	8	2 32 23.43	16 45 47.1	135.68
9	0 51 46.63	4 41 52.4	166.23	9	2 34 36.18	16 59 21.2	134.68
10	0 53 52.16	4 58 29.8	165.93	10	2 36 49.14	17 12 49.3	133.67
11	0 55 57.77	5 15 5.4	165.60	11	2 39 2.33	17 26 11.3	132.63
12	0 58 3.44	5 31 39.0	165.28	12	2 41 15.75	17 39 27.1	131.60
13	1 0 9.19	5 48 10.7	164.92	13	2 43 29.39	17 52 36.7	130.55
14	1 2 15.02	6 4 40.2	164.57	14	2 45 43.25	18 5 40.0	129.48
15	1 4 20.92	6 21 7.6	164.18	15	2 47 57.34	18 18 36.9	128.40
16	1 6 26.92	6 37 32.7	163.80	16	2 50 11.65	18 31 27.3	127.30
17	1 8 33.01	6 53 55.5	163.37	17	2 52 26.20	18 44 11.1	126.18
18	1 10 39.20	7 10 15.7	162.95	18	2 54 40.97	18 56 48.2	125.08
19	1 12 45.48	7 26 33.4	162.52	19	2 56 55.97	19 9 18.7	123.93
20	1 14 51.87	7 42 48.5	162.05	20	2 59 11.20	19 21 42.3	122.80
21	1 16 58.37	7 59 0.8	161.58	21	3 1 26.65	19 33 59.1	121.68
22	1 19 4.98	8 15 10.3	161.10	22	3 3 42.34	19 46 8.9	120.47
23	1 21 11.71	N. 8 31 16.9	160.58	23	3 5 58.25	N. 19 58 11.7	119.27
FRIDAY 10.				SUNDAY 12.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	1 23 18.56	N. 8 47 20.4	160.07	0	3 8 14.39	N. 20 10 7.3	118.08
1	1 25 25.54	9 3 20.8	159.53	1	3 10 30.76	20 21 55.8	116.85
2	1 27 32.65	9 19 18.0	159.00	2	3 12 47.35	20 33 36.9	115.63
3	1 29 39.89	9 35 12.0	158.43	3	3 15 4.18	20 45 10.8	114.42
4	1 31 47.27	9 51 2.6	157.85	4	3 17 21.23	20 56 37.3	113.15
5	1 33 54.79	10 6 49.7	157.25	5	3 19 38.50	21 7 56.2	111.92
6	1 36 2.45	10 22 33.2	156.65	6	3 21 56.00	21 19 7.7	110.63
7	1 38 10.26	10 38 13.1	156.03	7	3 24 13.72	21 30 11.5	109.37
8	1 40 18.23	10 53 49.3	155.38	8	3 26 31.67	21 41 7.7	108.07
9	1 42 26.35	11 9 21.6	154.75	9	3 28 49.83	21 51 56.1	106.75
10	1 44 34.64	11 24 50.1	154.07	10	3 31 8.21	22 2 36.6	105.45
11	1 46 43.08	11 40 14.5	153.40	11	3 33 26.82	22 13 9.3	104.13
12	1 48 51.69	11 55 34.9	152.70	12	3 35 45.63	22 23 34.1	102.80
13	1 51 0.47	12 10 51.1	152.00	13	3 38 4.66	22 33 50.9	101.45
14	1 53 9.43	12 26 3.1	151.27	14	3 40 23.90	22 43 59.6	100.08
15	1 55 18.56	12 41 10.7	150.52	15	3 42 43.36	22 54 0.1	98.78
16	1 57 27.87	12 56 13.8	149.78	16	3 45 3.02	23 3 52.5	97.35
17	1 59 37.37	13 11 12.5	149.00	17	3 47 22.88	23 13 36.6	95.97
18	2 1 47.05	13 26 6.5	148.20	18	3 49 42.95	23 23 12.4	94.55
19	2 3 56.91	13 40 55.7	147.42	19	3 52 3.21	23 32 39.7	93.17
20	2 6 6.97	13 55 40.2	146.60	20	3 54 23.68	23 41 58.7	91.75
21	2 8 17.22	14 10 19.8	145.77	21	3 56 44.34	23 51 9.2	90.32
22	2 10 27.67	14 24 54.4	144.92	22	3 59 5.18	24 0 11.1	88.88
23	2 12 38.32	14 39 23.9	144.07	23	4 1 26.22	24 9 4.4	87.43
24	2 14 49.16	N. 14 53 48.3		24	4 3 47.45	N. 24 17 49.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 13.				WEDNESDAY 15.			
0	h m s	N. 24 17 49 0	85 98	0	h m s	N. 28 16 21 2	10 80
1	4 6 8 85	24 26 24 9	84 52	1	6 1 10 87	28 17 26 0	9 22
2	4 8 30 43	24 34 52 0	83 05	2	6 3 34 60	28 18 21 3	7 65
3	4 10 52 18	24 43 10 3	81 58	3	6 5 58 22	28 19 7 2	6 07
4	4 13 14 10	24 51 19 8	80 08	4	6 8 21 72	28 19 43 6	4 50
5	4 15 36 19	24 59 20 3	78 62	5	6 10 45 10	28 20 10 6	2 93
6	4 17 58 44	25 7 12 0	77 10	6	6 13 8 35	28 20 28 2	1 37
7	4 20 20 84	25 14 54 6	75 60	7	6 15 31 46	28 20 36 4	0 18
8	4 22 43 39	25 22 28 2	74 10	8	6 17 54 43	28 20 35 3	1 73
9	4 25 6 09	25 29 52 8	72 57	9	6 20 17 25	28 20 24 9	3 28
10	4 27 28 94	25 37 8 2	71 05	10	6 22 39 91	28 20 5 2	4 82
11	4 29 51 92	25 44 14 5	69 52	11	6 25 2 42	28 19 36 3	6 37
12	4 32 15 03	25 51 11 6	68 00	12	6 27 24 75	28 18 58 1	7 88
13	4 34 38 27	25 57 59 6	66 45	13	6 29 46 91	28 18 10 8	9 42
14	4 37 1 63	26 4 38 3	64 90	14	6 32 8 89	28 17 14 3	10 93
15	4 39 25 12	26 11 7 7	63 35	15	6 34 30 69	28 16 8 7	12 43
16	4 41 48 71	26 17 27 8	61 80	16	6 36 52 29	28 14 54 1	13 95
17	4 44 12 41	26 23 38 6	60 23	17	6 39 13 70	28 13 30 4	15 45
18	4 46 36 21	26 29 40 0	58 65	18	6 41 34 90	28 11 57 7	16 93
19	4 49 0 11	26 35 31 9	57 10	19	6 43 55 90	28 10 16 1	18 43
20	4 51 24 10	26 41 14 5	55 52	20	6 46 16 68	28 8 25 5	19 90
21	4 53 48 17	26 46 47 6	53 93	21	6 48 37 24	28 6 26 1	21 38
22	4 56 12 32	26 52 11 2	52 37	22	6 50 57 58	28 4 17 8	22 85
23	4 58 36 55	N. 26 57 25 4	50 77	23	6 53 17 69	N. 28 2 0 7	24 30
TUESDAY 14.				THURSDAY 16.			
0	5 1 0 84	N. 27 2 30 0	49 17	0	6 55 37 56	N. 27 59 34 9	25 75
1	5 3 25 20	27 7 25 0	47 58	1	6 57 57 19	27 57 0 4	27 20
2	5 5 49 60	27 12 10 5	45 98	2	7 0 16 58	27 54 17 2	28 63
3	5 8 14 06	27 16 46 4	44 38	3	7 2 35 72	27 51 25 4	30 07
4	5 10 38 56	27 21 12 7	42 78	4	7 4 54 60	27 48 25 0	31 47
5	5 13 3 09	27 25 29 4	41 18	5	7 7 13 23	27 45 16 2	32 88
6	5 15 27 65	27 29 36 5	39 60	6	7 9 31 60	27 41 58 9	34 30
7	5 17 52 24	27 33 34 1	37 98	7	7 11 49 70	27 38 33 1	35 67
8	5 20 16 83	27 37 22 0	36 37	8	7 14 7 53	27 34 59 1	37 07
9	5 22 41 44	27 41 0 2	34 78	9	7 16 25 09	27 31 16 7	38 45
10	5 25 6 05	27 44 28 9	33 17	10	7 18 42 37	27 27 26 0	39 80
11	5 27 30 66	27 47 47 9	31 57	11	7 20 59 37	27 23 27 2	41 17
12	5 29 55 25	27 50 57 3	29 97	12	7 23 16 08	27 19 20 2	42 52
13	5 32 19 83	27 53 57 1	28 37	13	7 25 30 30	15 5 1	43 85
14	5 34 44 37	27 56 47 3	26 75	14	7 27 30 30	0	45 17
15	5 37 8 89	27 59 27 8	25 17	15	7 30 30 30	46 50	
16	5 39 33 37	28 1 58 8	23 55	16	7 33 30 30	7 82	
17	5 41 57 80	28 4 20 1	21 95	17	7 36 30 30	1 12	
18	5 44 22 18	28 6 31 8	20 37	18	7 39 30 30	42	
19	5 46 46 51	28 8 34 0	18 75	19	7 42 30 30	58	
20	5 49 10 77	28 10 26 5	17 17	20	7 45 30 30	7	
21	5 51 34 96	28 12 9 5	15 57	21	7 48 30 30		
22	5 53 59 07	28 13 42 9	13 98	22	7 51 30 30		
23	5 56 23 09	28 15 6 8	12 40	23	7 54 30 30		
24	5 58 47 03	N. 28 16 21 2		24	7 57 30 30		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 17.				SUNDAY 19.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	7 50 13.37	N.26 19 41.3	57.97	0	9 30 17.71	N.19 40 20.1	105.72
1	7 52 26.12	26 13 53.5	59.20	1	9 32 15.15	19 29 45.8	106.48
2	7 54 38.55	26 7 58.3	60.40	2	9 34 12.32	19 19 6.9	107.25
3	7 56 50.66	26 1 55.9	61.62	3	9 36 9.20	19 8 23.4	107.98
4	7 59 2.44	25 55 46.2	62.82	4	9 38 5.81	18 57 35.5	108.73
5	8 1 13.90	25 49 29.3	64.00	5	9 40 2.15	18 46 43.1	109.47
6	8 3 25.03	25 43 5.3	65.17	6	9 41 58.23	18 35 46.3	110.18
7	8 5 35.83	25 36 34.3	66.33	7	9 43 54.03	18 24 45.2	110.90
8	8 7 46.31	25 29 56.3	67.50	8	9 45 49.58	18 13 39.8	111.62
9	8 9 56.45	25 23 11.3	68.63	9	9 47 44.86	18 2 30.1	112.32
10	8 12 6.27	25 16 19.5	69.78	10	9 49 39.89	17 51 16.2	113.00
11	8 14 15.75	25 9 20.8	70.90	11	9 51 34.67	17 39 58.2	113.68
12	8 16 24.90	25 2 15.4	72.02	12	9 53 29.19	17 28 36.1	114.37
13	8 18 33.72	24 55 3.3	73.12	13	9 55 23.47	17 17 9.9	115.03
14	8 20 42.21	24 47 44.6	74.22	14	9 57 17.51	17 5 39.7	115.68
15	8 22 50.36	24 40 19.3	75.30	15	9 59 11.32	16 54 5.6	116.33
16	8 24 58.19	24 32 47.5	76.37	16	10 1 4.88	16 42 27.6	116.98
17	8 27 5.67	24 25 9.3	77.45	17	10 2 58.22	16 30 45.7	117.62
18	8 29 12.83	24 17 24.6	78.48	18	10 4 51.32	16 19 0.0	118.25
19	8 31 19.66	24 9 33.7	79.55	19	10 6 44.20	16 7 10.5	118.87
20	8 33 26.15	24 1 36.4	80.58	20	10 8 36.85	15 55 17.3	119.48
21	8 35 32.32	23 53 32.9	81.60	21	10 10 29.29	15 43 20.4	120.08
22	8 37 38.15	23 45 23.3	82.62	22	10 12 21.52	15 31 19.9	120.68
23	8 39 43.65	N.23 37 7.6	83.63	23	10 14 13.53	N.15 19 15.8	121.27
SATURDAY 18.				MONDAY 20.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	8 41 48.82	N.23 28 45.8	84.63	0	10 16 5.33	N.15 7 8.2	121.85
1	8 43 53.66	23 20 18.0	85.60	1	10 17 56.93	14 54 57.1	122.42
2	8 45 58.18	23 11 44.4	86.60	2	10 19 48.34	14 42 42.6	123.00
3	8 48 2.37	23 3 4.8	87.57	3	10 21 39.54	14 30 24.6	123.55
4	8 50 6.23	22 54 19.4	88.52	4	10 23 30.56	14 18 3.3	124.10
5	8 52 9.77	22 45 28.3	89.47	5	10 25 21.39	14 5 38.7	124.65
6	8 54 12.99	22 36 31.5	90.40	6	10 27 12.03	13 53 10.8	125.18
7	8 56 15.88	22 27 29.1	91.33	7	10 29 2.50	13 40 39.7	125.72
8	8 58 18.46	22 18 21.1	92.25	8	10 30 52.79	13 28 5.4	126.25
9	9 0 20.72	22 9 7.6	93.17	9	10 32 42.90	13 15 27.9	126.75
10	9 2 22.66	21 59 48.6	94.07	10	10 34 32.85	13 2 47.4	127.27
11	9 4 24.28	21 50 24.2	94.97	11	10 36 22.63	12 50 3.8	127.78
12	9 6 25.60	21 40 54.4	95.83	12	10 38 12.25	12 37 17.1	128.27
13	9 8 26.60	21 31 19.4	96.72	13	10 40 1.72	12 24 27.5	128.77
14	9 10 27.30	21 21 39.1	97.58	14	10 41 51.04	12 11 34.9	129.25
15	9 12 27.68	21 11 53.6	98.43	15	10 43 40.21	11 58 39.4	129.72
16	9 14 27.77	21 2 3.0	99.28	16	10 45 29.24	11 45 41.1	130.18
17	9 16 27.54	20 52 7.3	100.12	17	10 47 18.12	11 32 40.0	130.65
18	9 18 27.02	20 42 6.6	100.93	18	10 49 6.87	11 19 36.1	131.12
19	9 20 26.20	20 32 1.0	101.77	19	10 50 55.49	11 6 29.4	131.56
20	9 22 25.09	20 21 50.4	102.57	20	10 52 43.99	10 53 20.1	132.00
21	9 24 23.68	20 11 35.0	103.37	21	10 54 32.36	10 40 8.1	132.43
22	9 26 21.98	20 1 14.8	104.17	22	10 56 20.61	10 26 53.5	132.85
23	9 28 19.99	19 50 49.8	104.95	23	10 58 8.75	10 13 36.4	133.28
24	9 30 17.71	N.19 40 20.1		24	10 59 56.77	N.10 0 16.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 21.				THURSDAY 23.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	10 59 56.77	N. 10 0 16.7	133.70	0	12 25 40.44	S. 1 15 49.1	145.60
1	11 1 44.69	9 46 54.5	134.10	1	12 27 28.62	1 30 22.7	145.68
2	11 3 32.51	9 33 29.9	134.50	2	12 29 16.91	1 44 56.8	145.75
3	11 5 20.24	9 20 2.9	134.88	3	12 31 5.33	1 59 31.3	145.80
4	11 7 7.87	9 6 33.6	135.28	4	12 32 53.88	2 14 6.1	145.85
5	11 8 55.41	8 53 1.9	135.67	5	12 34 42.57	2 28 41.2	145.88
6	11 10 42.87	8 39 27.9	136.03	6	12 36 31.39	2 43 16.5	145.92
7	11 12 30.25	8 25 51.7	136.40	7	12 38 20.37	2 57 52.0	145.95
8	11 14 17.56	8 12 13.3	136.77	8	12 40 9.49	3 12 27.7	145.95
9	11 16 4.79	7 58 32.7	137.12	9	12 41 58.76	3 27 3.4	145.97
10	11 17 51.96	7 44 50.0	137.47	10	12 43 48.20	3 41 39.2	145.97
11	11 19 39.07	7 31 5.2	137.82	11	12 45 37.80	3 56 15.0	145.95
12	11 21 26.12	7 17 18.3	138.15	12	12 47 27.58	4 10 50.7	145.93
13	11 23 13.12	7 3 29.4	138.47	13	12 49 17.53	4 25 26.3	145.92
14	11 25 0.07	6 49 38.6	138.78	14	12 51 7.66	4 40 1.8	145.87
15	11 26 46.98	6 35 45.9	139.12	15	12 52 57.98	4 54 37.0	145.83
16	11 28 33.84	6 21 51.2	139.40	16	12 54 48.48	5 9 12.0	145.77
17	11 30 20.68	6 7 54.8	139.72	17	12 56 39.18	5 23 46.6	145.70
18	11 32 7.48	5 53 56.5	140.02	18	12 58 30.08	5 38 20.8	145.63
19	11 33 54.26	5 39 56.4	140.30	19	13 0 21.18	5 52 54.6	145.53
20	11 35 41.01	5 25 54.6	140.58	20	13 2 12.50	6 7 27.8	145.45
21	11 37 27.75	5 11 51.1	140.85	21	13 4 4.02	6 22 0.5	145.35
22	11 39 14.48	4 57 46.0	141.12	22	13 5 55.77	6 36 32.6	145.23
23	11 41 1.20	N. 4 43 39.3	141.38	23	13 7 47.74	S. 6 51 4.0	145.10
WEDNESDAY 22.				FRIDAY 24.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	11 42 47.91	N. 4 29 31.0	141.63	0	13 9 39.94	S. 7 5 34.6	144.97
1	11 44 34.63	4 15 21.2	141.88	1	13 11 32.37	7 20 4.4	144.82
2	11 46 21.35	4 1 9.9	142.12	2	13 13 25.04	7 34 33.3	144.67
3	11 48 8.09	3 46 57.2	142.37	3	13 15 17.95	7 49 1.3	144.50
4	11 49 54.84	3 32 43.0	142.58	4	13 17 11.11	8 3 28.3	144.32
5	11 51 41.61	3 18 27.5	142.80	5	13 19 4.53	8 17 54.2	144.13
6	11 53 28.41	3 4 10.7	143.02	6	13 20 58.21	8 32 19.0	143.95
7	11 55 15.24	2 49 52.6	143.22	7	13 22 52.14	8 46 42.7	143.73
8	11 57 2.10	2 35 33.3	143.43	8	13 24 46.35	9 1 5.1	143.50
9	11 58 49.00	2 21 12.7	143.62	9	13 26 40.83	9 15 26.1	143.28
10	12 0 35.94	2 6 51.0	143.78	10	13 28 35.59	9 29 45.8	143.05
11	12 2 22.94	1 52 28.3	143.98	11	13 30 30.63	9 44 4.1	142.80
12	12 4 9.98	1 38 4.4	144.15	12	13 32 25.96	9 58 20.9	142.53
13	12 5 57.09	1 23 39.5	144.32	13	13 34 21.58	10 12 36.1	142.27
14	12 7 44.25	1 9 13.6	144.47	14	13 36 17.50	10 26 49.7	141.98
15	12 9 31.49	0 54 46.8	144.62	15	13 38 13.73	10 41 1.6	141.67
16	12 11 18.80	0 40 19.1	144.75	16	13 40 10.25	10 55 11.6	141.38
17	12 13 6.18	0 25 50.6	144.90	17	13 42 7.00		
18	12 14 53.65	N. 0 11 21.2	145.02	18	13 44 4.4		
19	12 16 41.20	S. 0 3 8.9	145.13	19	13 46		
20	12 18 28.84	0 17 39.7	145.23	20	13 47		
21	12 20 16.58	0 32 11.1	145.35	21	13 48		
22	12 22 4.43	0 46 43.2	145.45	22	13 49		
23	12 23 52.38	1 1 15.9	145.53	23	13 50		
24	12 25 40.44	S. 1 15 49.1		24			

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 25.				MONDAY 27.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	13 55 54.11	S. 12 47 19.2	138.45	0	15 39 15.40	S. 22 38 39.1	100.98
1	13 57 53.61	13 1 9.9	138.02	1	15 41 35.78	22 48 45.0	99.78
2	13 59 53.47	13 14 58.0	137.58	2	15 43 56.64	22 58 43.7	98.58
3	14 1 53.69	13 28 43.5	137.13	3	15 46 17.97	23 8 35.2	97.35
4	14 3 54.27	13 42 26.3	136.67	4	15 48 39.78	23 18 19.3	96.10
5	14 5 55.22	13 56 6.3	136.18	5	15 51 2.07	23 27 55.9	94.83
6	14 7 56.54	14 9 43.4	135.72	6	15 53 24.83	23 37 24.9	93.55
7	14 9 58.24	14 23 17.7	135.18	7	15 55 48.07	23 46 46.2	92.27
8	14 12 0.31	14 36 48.8	134.68	8	15 58 11.77	23 55 59.8	90.93
9	14 14 2.77	14 50 16.9	134.15	9	16 0 35.95	24 5 5.4	89.60
10	14 16 5.62	15 3 41.8	133.60	10	16 3 0.60	24 14 3.0	88.25
11	14 18 8.87	15 17 3.4	133.03	11	16 5 25.71	24 22 52.5	86.88
12	14 20 12.50	15 30 21.6	132.47	12	16 7 51.28	24 31 33.8	85.50
13	14 22 16.54	15 43 36.4	131.87	13	16 10 17.32	24 40 6.8	84.10
14	14 24 20.99	15 56 47.6	131.27	14	16 12 43.81	24 48 31.4	82.67
15	14 26 25.84	16 9 55.2	130.65	15	16 15 10.75	24 56 47.4	81.22
16	14 28 31.11	16 22 59.1	130.02	16	16 17 38.15	25 4 54.7	79.78
17	14 30 36.79	16 35 59.2	129.37	17	16 20 5.99	25 12 53.4	78.30
18	14 32 42.90	16 48 55.4	128.68	18	16 22 34.28	25 20 43.2	76.80
19	14 34 49.42	17 1 47.5	128.02	19	16 25 3.00	25 28 24.0	75.30
20	14 36 56.38	17 14 35.6	127.30	20	16 27 32.16	25 35 55.8	73.77
21	14 39 3.76	17 27 19.4	126.60	21	16 30 1.75	25 43 18.4	72.23
22	14 41 11.58	17 39 59.0	125.88	22	16 32 31.76	25 50 31.8	70.68
23	14 43 19.83	S. 17 52 34.3	125.12	23	16 35 2.20	S. 25 57 35.9	69.10
SUNDAY 26.				TUESDAY 28.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	14 45 28.52	S. 18 5 5.0	124.37	0	16 37 33.05	S. 26 4 30.5	67.52
1	14 47 37.65	18 17 31.2	123.58	1	16 40 4.31	26 11 15.6	65.90
2	14 49 47.24	18 29 52.7	122.78	2	16 42 35.98	26 17 51.0	64.28
3	14 51 57.27	18 42 9.4	121.97	3	16 45 8.04	26 24 16.7	62.63
4	14 54 7.75	18 54 21.2	121.15	4	16 47 40.49	26 30 32.5	61.00
5	14 56 18.69	19 6 28.1	120.32	5	16 50 13.33	26 36 38.5	59.32
6	14 58 30.08	19 18 30.0	119.43	6	16 52 46.55	26 42 34.4	57.65
7	15 0 41.93	19 30 26.6	118.57	7	16 55 20.14	26 48 20.3	55.97
8	15 2 54.25	19 42 18.0	117.67	8	16 57 54.10	26 53 56.1	54.23
9	15 5 7.02	19 54 4.0	116.77	9	17 0 28.41	26 59 21.5	52.53
10	15 7 20.27	20 5 44.6	115.82	10	17 3 3.07	27 4 36.7	50.78
11	15 9 33.98	20 17 19.5	114.88	11	17 5 38.06	27 9 41.4	49.05
12	15 11 48.15	20 28 48.8	113.92	12	17 8 13.41	27 14 35.7	47.28
13	15 14 2.80	20 40 12.3	112.93	13	17 10 49.08	27 19 19.4	45.52
14	15 16 17.93	20 51 29.9	111.95	14	17 13 25.06	27 23 52.5	43.72
15	15 18 33.53	21 2 41.6	110.92	15	17 16 1.36	27 28 14.8	41.93
16	15 20 49.60	21 13 47.1	109.88	16	17 18 37.96	27 32 26.4	40.12
17	15 23 6.15	21 24 46.4	108.83	17	17 21 14.85	27 36 27.1	38.30
18	15 25 23.18	21 35 39.4	107.77	18	17 23 52.02	27 40 16.9	36.47
19	15 27 40.69	21 46 26.0	106.68	19	17 26 29.47	27 43 55.7	34.62
20	15 29 58.67	21 57 6.1	105.58	20	17 29 7.18	27 47 23.4	32.78
21	15 32 17.14	22 7 39.6	104.45	21	17 31 45.14	27 50 40.1	30.90
22	15 34 36.08	22 18 6.3	103.32	22	17 34 23.35	27 53 45.5	29.05
23	15 36 55.50	22 28 26.2	102.15	23	17 37 1.80	27 56 39.8	27.17
24	15 39 15.40	S. 22 38 39.1		24	17 39 40.48	S. 27 59 22.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 29.				THURSDAY 30.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	17 39 40.48	S. 27 59 22.8	25.27	0	18 43 48.15	S. 28 6 35.5	21.50
1	17 42 19.37	28 1 54.4	23.38	1	18 46 28.90	28 4 26.5	23.45
2	17 44 58.47	28 4 14.7	21.47	2	18 49 9.58	28 2 5.8	25.42
3	17 47 37.76	28 6 23.5	19.57	3	18 51 50.19	27 59 33.3	27.37
4	17 50 17.24	28 8 20.9	17.63	4	18 54 30.71	27 56 49.1	29.32
5	17 52 56.88	28 10 6.7	15.72	5	18 57 11.14	27 53 53.2	31.27
6	17 55 36.69	28 11 41.0	13.78	6	18 59 51.46	27 50 45.6	33.20
7	17 58 16.65	28 13 3.7	11.85	7	19 2 31.66	27 47 26.4	35.13
8	18 0 56.75	28 14 14.8	9.92	8	19 5 11.73	27 43 55.6	37.07
9	18 3 36.97	28 15 14.3	7.97	9	19 7 51.67	27 40 13.2	38.98
10	18 6 17.32	28 16 2.1	6.00	10	19 10 31.45	27 36 19.3	40.90
11	18 8 57.77	28 16 38.1	4.07	11	19 13 11.08	27 32 13.9	42.82
12	18 11 38.32	28 17 2.5	2.10	12	19 15 50.54	27 27 57.0	44.70
13	18 14 18.95	28 17 15.1	0.15	13	19 18 29.82	27 23 28.8	46.62
14	18 16 59.66	28 17 16.0	1.83	14	19 21 8.90	27 18 49.1	48.48
15	18 19 40.42	28 17 5.0	3.78	15	19 23 47.80	27 13 58.2	50.35
16	18 22 21.23	28 16 42.3	5.75	16	19 26 26.48	27 8 56.1	52.23
17	18 25 2.08	28 16 7.8	7.72	17	19 29 4.94	27 3 42.7	54.08
18	18 27 42.96	28 15 21.5	9.70	18	19 31 43.18	26 58 18.2	55.93
19	18 30 23.85	28 14 23.3	11.65	19	19 34 21.19	26 52 42.6	57.77
20	18 33 4.75	28 13 13.4	13.63	20	19 36 58.95	26 46 56.0	59.60
21	18 35 45.64	28 11 51.6	15.60	21	19 39 36.46	26 40 58.4	61.42
22	18 38 26.51	28 10 18.0	17.55	22	19 42 13.71	26 34 49.9	63.22
23	18 41 7.35	28 8 32.7	19.53	23	19 44 50.70	26 28 30.6	65.02
24	18 43 48.15	S. 28 6 35.5		24	19 47 27.42	S. 26 22 0.5	

PHASES OF THE MOON.

☾ First Quarter	- - - - -	^a ^h ^m
○ Full Moon	- - - - -	11 23 30.0
☾ Last Quarter	- - - - -	19 18 34.2
● New Moon	- - - - -	27 13 50.0

☾ Perigee	- - - - -
☾ Apogee	- - - - -

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^b .	P. L. of diff.	VI ^b .	P. L. of diff.	IX ^b .	P. L. of diff.	L. of diff.
1	SUN W.	37 13 1	2802	38 47 27	2795	40 22 2	2787	41 56 47	2779	
	Fomalhaut E.	75 7 27	2678	73 30 17	2675	71 53 3	2672	70 15 46	2670	
	α Pegasi E.	96 25 16	2801	94 50 49	2793	93 16 12	2785	91 41 24	2778	
2	SUN W.	49 52 50	2746	51 28 29	2740	53 4 16	2734	54 40 11	2727	
	Mars W.	22 36 57	2692	24 13 48	2679	25 50 56	2670	27 28 16	2661	
	Fomalhaut E.	62 9 2	2672	60 31 45	2675	58 54 32	2680	57 17 25	2685	
3	α Pegasi E.	83 45 23	2752	82 9 52	2749	80 34 17	2747	78 58 39	2746	
	SUN W.	62 41 44	2699	64 18 25	2695	65 55 12	2689	67 32 7	2683	
	Mars W.	35 37 39	2624	37 16 1	2618	38 54 32	2612	40 33 10	2607	
4	Venus W.	20 49 27	2732	22 24 18	2775	23 59 19	2766	25 34 31	2759	
	Fomalhaut E.	49 14 12	2734	47 38 17	2749	46 2 42	2767	44 27 31	2789	
	α Pegasi E.	71 0 22	2750	69 24 49	2753	67 49 20	2758	66 13 57	2765	
5	SUN W.	75 38 21	2660	77 15 55	2655	78 53 35	2651	80 31 21	2646	
	Mars W.	48 48 15	2580	50 27 38	2575	52 7 8	2570	53 46 44	2566	
	Venus W.	33 32 46	2728	35 8 49	2722	36 44 59	2716	38 21 17	2712	
6	Fomalhaut E.	36 40 12	2958	35 9 7	3010	33 39 7	3072	32 10 23	3145	
	α Pegasi E.	58 19 40	2815	56 45 32	2831	55 11 44	2849	53 38 19	2869	
	α Arietis E.	98 40 52	2387	96 56 59	2383	95 13 0	2379	93 28 55	2375	
7	SUN W.	88 41 35	2627	90 19 54	2623	91 58 18	2620	93 36 46	2615	
	Mars W.	62 6 14	2545	63 46 25	2540	65 26 42	2537	67 7 4	2534	
	Venus W.	46 24 22	2689	48 1 17	2685	49 38 17	2681	51 15 23	2677	
8	α Pegasi E.	45 58 56	3017	44 29 5	3060	43 0 7	3109	41 32 9	3165	
	α Arietis E.	84 47 3	2356	83 2 25	2353	81 17 42	2350	79 32 56	2347	
9	SUN W.	101 50 16	2601	103 29 10	2598	105 8 8	2595	106 47 9	2594	
	Mars W.	75 30 0	2518	77 10 48	2515	78 51 40	2513	80 32 35	2511	
	Venus W.	59 22 7	2660	60 59 41	2657	62 37 19	2654	64 15 0	2652	
10	α Arietis E.	70 48 12	2338	69 3 8	2337	67 18 2	2336	65 32 55	2335	
	Aldebaran E.	101 13 45	2339	99 28 42	2335	97 43 34	2332	95 58 21	2330	
11	SUN W.	115 2 52	2585	116 42 7	2585	118 21 23	2584	120 0 40	2584	
	Mars W.	88 57 52	2502	90 39 2	2501	92 20 14	2501	94 1 26	2500	
	Venus W.	72 24 15	2642	74 2 13	2641	75 40 12	2640	77 18 13	2638	
12	α Aquilæ W.	50 51 16	3881	52 4 55	3802	53 19 55	3730	54 36 10	3664	
	α Arietis E.	56 47 20	2339	55 2 18	2341	53 17 19	2344	51 32 24	2348	
	Aldebaran E.	87 11 32	2321	85 26 3	2320	83 40 33	2321	81 55 4	2321	
13	Mars W.	102 27 32	2502	104 8 43	2503	105 49 52	2505	107 30 59	2506	
	Venus W.	85 28 27	2639	87 6 29	2641	88 44 29	2642	90 22 27	2643	
	α Aquilæ W.	61 13 0	3419	62 34 55	3382	63 57 32	3350	65 20 46	3321	
14	Fomalhaut W.	28 53 23	3203	30 19 29	3109	31 47 28	3029	33 17 5	2961	
	α Arietis E.	42 49 32	2378	41 5 26	2388	39 21 34	2399	37 37 58	2412	
	Aldebaran E.	73 7 45	2326	71 22 23	2327	69 37 3	2330	67 51 47	2334	
15	Venus W.	98 31 37	2657	100 9 15	2660	101 46 49	2664	103 24 17	2669	
	α Aquilæ W.	72 24 16	3217	73 50 5	3204	75 16 10	3192	76 42 29	3183	
	Fomalhaut W.	41 2 53	2744	42 38 34	2717	44 14 51	2695	45 51 38	2675	
16	α Arietis E.	29 5 37	2515	27 24 45	2549	25 44 40	2590	24 5 31	2640	
	Aldebaran E.	59 6 55	2358	57 22 20	2364	55 37 53	2371	53 53 36	2379	
	Pollux E.	102 36 17	2281	100 49 50	2284	99 3 27	2288	97 17 10	2292	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
1	SUN W.	43 31 42	2772	45 6 46	2766	46 41 58	2759	48 17 20	2753
	Fomalhaut E.	68 38 26	2669	67 1 5	2669	65 23 43	2669	63 46 22	2670
	α Pegasi E.	90 6 27	2771	88 31 21	2766	86 56 8	2760	85 20 48	2756
2	SUN W.	56 16 15	2722	57 52 25	2716	59 28 44	2711	61 5 10	2705
	Mars W.	29 5 48	2653	30 43 31	2646	32 21 24	2638	33 59 27	2632
	Fomalhaut E.	55 40 25	2692	54 3 34	2699	52 26 53	2709	50 50 25	2720
	α Pegasi E.	77 23 0	2745	75 47 20	2744	74 11 39	2745	72 35 59	2747
3	SUN W.	69 9 9	2679	70 46 17	2674	72 23 32	2669	74 0 53	2664
	Mars W.	42 11 56	2601	43 50 50	2596	45 29 51	2590	47 8 59	2585
	Venus W.	27 9 53	2752	28 45 24	2746	30 21 3	2739	31 56 51	2734
	Fomalhaut E.	42 52 49	2813	41 18 38	2842	39 45 5	2875	38 12 14	2913
	α Pegasi E.	64 38 43	2772	63 3 38	2781	61 28 45	2791	59 54 5	2802
4	SUN W.	82 9 13	2643	83 47 10	2638	85 25 13	2634	87 3 22	2631
	Mars W.	55 26 26	2561	57 6 14	2557	58 46 8	2553	60 26 8	2548
	Venus W.	39 57 41	2707	41 34 12	2702	43 10 49	2697	44 47 33	2693
	Fomalhaut E.	30 43 8	3231	29 17 36	3333	27 54 3	3456	26 32 50	3605
	α Pegasi E.	52 5 20	2891	50 32 50	2917	49 0 53	2947	47 29 34	2980
	α Arietis E.	91 44 44	2370	90 0 26	2366	88 16 3	2363	86 31 35	2360
5	SUN W.	95 15 20	2612	96 53 58	2610	98 32 40	2607	100 11 26	2604
	Mars W.	68 47 30	2530	70 28 1	2527	72 8 36	2524	73 49 16	2521
	Venus W.	52 52 34	2673	54 29 50	2669	56 7 11	2666	57 44 37	2663
	α Pegasi E.	40 5 18	3229	38 39 43	3302	37 15 34	3386	35 53 1	3483
	α Arietis E.	77 48 5	2345	76 3 11	2343	74 18 14	2341	72 33 14	2339
6	SUN W.	108 26 12	2591	110 5 19	2590	111 44 28	2588	113 23 39	2587
	Mars W.	82 13 33	2509	83 54 34	2507	85 35 38	2505	87 16 44	2504
	Venus W.	65 52 45	2649	67 30 34	2647	69 8 25	2645	70 46 19	2643
	α Arietis E.	63 47 47	2335	62 2 39	2335	60 17 31	2337	58 32 25	2337
	Aldebaran E.	94 13 5	2328	92 27 46	2326	90 42 24	2324	88 56 59	2322
7	SUN W.	121 39 57	2583	123 19 15	2584	124 58 32	2584	126 37 49	2585
	Mars W.	95 42 39	2500	97 23 52	2500	99 5 6	2500	100 46 19	2500
	Venus W.	78 56 16	2639	80 34 18	2638	82 12 21	2638	83 50 24	2638
	α Aquilæ W.	55 53 35	3606	57 12 3	3552	58 31 30	3504	59 51 50	3459
	α Arietis E.	49 47 35	2353	48 2 52	2357	46 18 16	2364	44 33 49	2371
	Aldebaran E.	80 9 35	2321	78 24 6	2321	76 38 37	2322	74 53 10	2324
8	Mars W.	109 12 4	2508	110 53 6	2511	112 34 4	2514	114 14 58	2517
	Venus W.	92 0 23	2645	93 38 17	2647	95 16 8	2650	96 53 55	2654
	α Aquilæ W.	66 44 33	3294	68 8 51	3271	69 33 36	3275	71 14 45	3232
	Fomalhaut W.	34 48 7	2903	36 20 22	2855	37 53 39		52 2775	
	α Arietis E.	35 54 40	2427	34 11 43	2444	32 29		7 2488	
	Aldebaran E.	66 6 37	2337	64 21 32	2341	62 36		39 2352	
9	Venus W.	105 1 39	2674	106 38 54	2679	108		2 2691	
	α Aquilæ W.	78 8 58	3176	79 35 36	3171			8 3166	
	Fomalhaut W.	47 28 52	2658	49 6 29	2644			5 2627	
	α Arietis E.	22 27 30	2701	20 50 51	2775				
	Aldebaran E.	52 9 31	2387	50 25 38	2390				
	Pollux E.	95 30 59	2297	93 44 55	2300				

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	P. L. of diff.
10	Venus W.	111 29 54	2697	113 6 38	2704	114 43 12	2712	116 19 36	2720
	α Aquilæ W.	83 55 58	3166	85 22 48	3168	86 49 35	3172	88 16 18	3177
	Fomalhaut W.	54 0 59	2615	55 39 33	2609	57 18 16	2605	58 57 4	2602
	α Pegasi W.	36 17 49	3389	37 40 18	3313	39 4 14	3247	40 29 28	3190
	Aldebaran E.	45 15 34	2433	43 32 47	2446	41 50 18	2462	40 8 11	2480
	Pollux E.	88 27 27	2318	86 41 54	2325	84 56 31	2331	83 11 17	2338
11	α Aquilæ W.	95 27 36	3229	96 53 11	3245	98 18 27	3262	99 43 23	3279
	Fomalhaut W.	67 11 33	2606	68 50 20	2610	70 29 2	2614	72 7 38	2620
	α Pegasi W.	47 49 53	3004	49 20 1	2981	50 50 38	2962	52 21 39	2946
	Aldebaran E.	31 44 30	2597	30 5 31	2630	28 27 17	2669	26 49 56	2713
	Pollux E.	74 27 50	2379	72 43 45	2388	70 59 53	2398	69 16 15	2407
	Jupiter E.	- - -	- -	- - -	- -	124 42 12	2446	122 59 42	2455
12	Fomalhaut W.	80 18 23	2659	81 55 58	2669	83 33 20	2680	85 10 27	2690
	α Pegasi W.	60 0 41	2903	61 32 56	2900	63 5 15	2899	64 37 35	2900
	α Arietis W.	16 31 2	3123	17 58 44	3022	19 28 29	2949	20 59 46	2893
	Pollux E.	60 41 39	2461	58 59 31	2472	57 17 39	2484	55 36 4	2496
	Regulus E.	97 20 29	2468	95 38 31	2480	93 56 50	2492	92 15 26	2504
	Jupiter E.	114 30 44	2508	112 49 42	2519	111 8 55	2531	109 28 25	2543
13	Fomalhaut W.	93 12 9	2754	94 47 37	2768	96 22 47	2783	97 57 37	2798
	α Pegasi W.	72 18 33	2920	73 50 26	2927	75 22 11	2935	76 53 45	2944
	α Arietis W.	28 48 43	2773	30 23 46	2766	31 58 58	2763	33 34 15	2761
	Pollux E.	47 12 27	2561	45 32 38	2574	43 53 7	2588	42 13 55	2601
	Regulus E.	83 52 39	2567	82 12 59	2580	80 33 37	2594	78 54 34	2608
	Jupiter E.	101 10 10	2607	99 31 24	2620	97 52 56	2633	96 14 46	2646
14	α Pegasi W.	84 28 31	2998	85 58 46	3010	87 28 46	3024	88 58 29	3037
	α Arietis W.	41 30 18	2780	43 5 12	2787	44 39 57	2795	46 14 31	2804
	Aldebaran W.	- - -	- -	- - -	- -	15 59 24	3498	17 19 50	3379
	Pollux E.	34 2 36	2672	32 25 18	2686	30 48 19	2701	29 11 40	2715
	Regulus E.	70 44 1	2677	69 6 51	2691	67 29 59	2706	65 53 27	2720
	Jupiter E.	88 8 33	2716	86 32 14	2729	84 56 13	2744	83 20 31	2758
15	α Arietis W.	54 4 19	2893	55 37 38	2865	57 10 42	2875	58 43 33	2886
	Aldebaran W.	24 26 42	3105	25 54 45	3084	27 23 14	3069	28 52 2	3056
	Pollux E.	21 13 15	2789	19 38 33	2804	18 4 11	2821	16 30 10	2838
	Regulus E.	57 55 28	2791	56 20 49	2805	54 46 27	2818	53 12 23	2832
	Jupiter E.	75 26 38	2827	73 52 45	2841	72 19 10	2854	70 45 52	2868
	α Arietis W.	66 24 19	2940	67 55 47	2950	69 27 2	2961	70 58 3	2972
16	Aldebaran W.	36 18 28	3038	37 47 53	3039	39 17 17	3042	40 46 38	3046
	Regulus E.	45 26 30	2900	43 54 11	2913	42 22 8	2926	40 50 22	2939
	Jupiter E.	63 3 35	2931	61 31 56	2943	60 0 32	2955	58 29 23	2966
	Spica ♀ E.	99 24 40	2884	97 52 0	2896	96 19 36	2907	94 47 26	2919
	SUN E.	- - -	- -	- - -	- -	128 38 17	3282	127 13 45	3294
	α Arietis W.	78 29 59	3020	79 59 47	3029	81 29 24	3038	82 58 50	3046
17	Aldebaran W.	48 12 11	3068	49 41 0	3072	51 9 44	3078	52 38 21	3083
	Regulus E.	33 15 29	3001	31 45 17	3013	30 15 20	3025	28 45 38	3038
	Jupiter E.	50 57 7	3020	49 27 19	3029	47 57 42	3038	46 28 17	3047
	Spica ♀ E.	87 10 6	2971	85 39 17	2980	84 8 39	2989	82 38 13	2998
	SUN E.	120 14 31	3351	118 51 19	3361	117 28 18	3371	116 5 28	3381

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
10	Venus W.	117 55 50	2727	119 31 54	2736	121 7 46	2744	122 43 27	2754
	α Aquilæ W.	89 42 54	3184	91 9 22	3193	92 35 40	3204	94 1 45	3215
	Fomalhaut W.	60 35 57	2600	62 14 52	2600	63 53 47	2601	65 32 41	2602
	α Pegasi W.	41 55 49	3141	43 23 9	3098	44 51 21	3061	46 20 18	3030
	Aldebaran E.	38 26 29	2498	36 45 13	2518	35 4 25	2541	33 24 9	2568
	Pollux E.	81 26 13	2346	79 41 20	2353	77 56 38	2362	76 12 8	2370
11	α Aquilæ W.	101 7 59	3300	102 32 10	3323	103 55 55	3347	105 19 12	3373
	Fomalhaut W.	73 46 6	2626	75 24 26	2633	77 2 36	2641	78 40 35	2649
	α Pegasi W.	53 53 0	2932	55 24 38	2922	56 56 29	2913	58 28 31	2907
	Aldebaran E.	25 13 34	2764	23 38 19	2825	22 4 24	2902	20 32 8	2995
	Pollux E.	67 32 50	2417	65 49 40	2427	64 6 44	2438	62 24 4	2449
	Jupiter E.	121 17 26	2465	119 35 23	2475	117 53 35	2486	116 12 2	2497
12	Fomalhaut W.	86 47 20	2702	88 23 57	2714	90 0 18	2727	91 36 22	2740
	α Pegasi W.	66 9 54	2902	67 42 11	2905	69 14 24	2908	70 46 32	2914
	α Arietis W.	22 32 12	2854	24 5 30	2823	25 39 28	2801	27 13 55	2785
	Pollux E.	53 54 45	2509	52 13 44	2522	50 33 1	2534	48 52 35	2547
	Regulus E.	90 34 18	2516	88 53 27	2528	87 12 53	2541	85 32 37	2554
	Jupiter E.	107 48 12	2553	106 8 15	2568	104 28 36	2580	102 49 14	2593
13	Fomalhaut W.	99 32 8	2814	101 6 18	2829	102 40 8	2846	104 13 36	2863
	α Pegasi W.	78 25 8	2954	79 56 19	2964	81 27 17	2975	82 58 1	2986
	α Arietis W.	35 9 34	2762	36 44 52	2764	38 20 7	2769	39 55 16	2774
	Pollux E.	40 35 1	2615	38 56 27	2629	37 18 11	2643	35 40 14	2657
	Regulus E.	77 15 50	2622	75 37 25	2635	73 59 18	2649	72 21 30	2663
	Jupiter E.	94 36 54	2661	92 59 21	2675	91 22 7	2688	89 45 11	2702
14	α Pegasi W.	90 27 56	3051	91 57 5	3066	93 25 56	3081	94 54 29	3096
	α Arietis W.	47 48 54	2813	49 23 5	2824	50 57 2	2833	52 30 47	2843
	Aldebaran W.	18 42 30	3290	20 6 53	3224	21 32 34	3173	22 59 15	3135
	Pollux E.	27 35 20	2729	25 59 19	2744	24 23 38	2760	22 48 17	2774
	Regulus E.	64 17 13	2734	62 41 19	2748	61 5 43	2763	59 30 26	2777
	Jupiter E.	81 45 8	2772	80 10 3	2786	78 35 17	2800	77 0 49	2813
15	α Arietis W.	60 16 10	2897	61 48 33	2907	63 20 43	2919	64 52 38	2930
	Aldebaran W.	30 21 5	3047	31 50 19	3043	33 19 39	3040	34 49 2	3038
	Pollux E.	14 56 31	2856	13 23 15	2874	11 50 23	2894	10 17 57	2918
	Regulus E.	51 38 37	2846	50 5 9	2860	48 31 59	2873	46 59 6	2887
	Jupiter E.	69 12 52	2880	67 40 8	2894	66 7 41	2906	64 35 30	2919
16	α Arietis W.	72 28 51	2982	73 59 26	2992	75 29 49	3002	77 0 0	3011
	Aldebaran W.	42 15 54	3049	43 45 6	3052	45 14 14	3057	46 43 16	3063
	Regulus E.	39 18 52	2951	37 47 38	2963	36 16 39	2976	34 45 56	2989
	Jupiter E.	56 58 28	2978	55 27 48	2989	53 57 21	2999	52 27 7	3010
	Spica ♀ E.	93 15 31	2930	91 43 50	2940	90 12 22	2951	88 41 8	2961
	Sun E.	125 49 27	3307	124 25 23	3319	123 1 33	3330	121 37 56	3340
17	α Arietis W.	84 28 6	3054	85 57 12	3061	87 26 9	3069	88 54 57	3076
	Aldebaran W.	54 6 52	3087	55 35 17	3092	57 3 36	3097	58 31 49	3101
	Regulus E.	27 16 12	3051	25 47 2	3064	24 18 8	3078	22 49 21	3082
	Jupiter E.	44 59 2	3056	43 29 58	3064	42 1 4	3071	40 39	
	Spica ♀ E.	81 7 57	3006	79 37 52	3014	78 7 56	3022	76	
	Sun E.	114 42 50	3389	113 20 21	3398	111 58 2	3406	110	

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^b .	P.L. of diff.	VI ^b .	P.L. of diff.	IX ^b .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
18	α Arietis W.	90 23 36	3083	91 52 7	3088	93 20 31	3094	94 48 48	3100
	Aldebaran W.	59 59 57	3105	61 28 0	3110	62 55 58	3114	64 23 51	3117
	Pollux W.	15 42 31	3050	17 11 42	3053	18 40 49	3056	20 9 52	3060
	Regulus E.	21 21 12	3109	19 53 13	3127	18 25 36	3147	16 58 23	3172
	Jupiter E.	39 3 44	3086	37 35 17	3092	36 6 58	3099	34 38 47	3104
	Spica η E.	75 8 32	3035	73 39 3	3041	72 9 41	3047	70 40 26	3052
	SUN E.	109 13 51	3421	107 51 58	3428	106 30 13	3433	105 8 34	3439
19	Aldebaran W.	71 42 22	3129	73 9 56	3130	74 37 29	3132	76 5 0	3132
	Pollux W.	27 34 6	3073	29 2 48	3076	30 31 27	3078	32 0 4	3078
	Jupiter E.	27 19 24	3127	25 51 47	3131	24 24 15	3134	22 56 47	3138
	Spica η E.	63 15 36	3071	61 46 51	3073	60 18 9	3076	58 49 30	3077
	SUN E.	98 21 46	3460	97 0 37	3463	95 39 31	3464	94 18 27	3467
20	Aldebaran W.	83 22 37	3128	84 50 12	3126	86 17 50	3124	87 45 30	3122
	Pollux W.	39 23 9	3075	40 51 49	3073	42 20 31	3071	43 49 16	3069
	Spica η E.	51 26 25	3077	49 57 47	3075	48 29 7	3073	47 0 24	3071
	SUN E.	87 33 22	3466	86 12 20	3463	84 51 15	3462	83 30 8	3458
21	Aldebaran W.	95 4 52	3101	96 33 0	3096	98 1 15	3090	99 29 37	3085
	Pollux W.	51 14 4	3047	52 43 19	3041	54 12 41	3035	55 42 10	3029
	Regulus W.	15 0 37	3175	16 27 16	3149	17 54 26	3127	19 22 3	3107
	Spica η E.	39 35 56	3051	38 6 47	3047	36 37 32	3041	35 8 10	3035
	SUN E.	76 43 33	3438	75 21 59	3431	74 0 17	3425	72 38 29	3418
22	Aldebaran W.	106 53 22	3050	108 22 33	3041	109 51 55	3033	111 21 27	3025
	Pollux W.	63 11 49	2989	64 42 15	2981	66 12 52	2971	67 43 41	2961
	Regulus W.	26 45 25	3031	28 14 59	3019	29 44 48	3006	31 14 54	2993
	Spica η E.	27 39 24	3001	26 9 12	2994	24 38 52	2987	23 8 23	2979
	SUN E.	65 47 18	3377	64 24 35	3367	63 1 41	3357	61 38 35	3347
23	Pollux W.	75 21 2	2907	76 53 12	2895	78 25 38	2883	79 58 18	2870
	Regulus W.	38 49 23	2928	40 21 7	2915	41 53 7	2902	43 25 24	2889
	Jupiter W.	20 9 42	2968	21 40 35	2953	23 11 47	2938	24 43 18	2924
	SUN E.	54 40 1	3290	53 15 38	3277	51 51 0	3265	50 26 8	3253
24	Pollux W.	87 45 48	2805	89 20 9	2792	90 54 48	2779	92 29 44	2764
	Regulus W.	51 11 9	2819	52 45 13	2804	54 19 35	2790	55 54 16	2776
	Jupiter W.	32 25 23	2852	33 58 43	2838	35 32 22	2824	37 6 19	2808
	SUN E.	43 17 55	3186	41 51 29	3172	40 24 46	3158	38 57 47	3145
25	Regulus W.	63 52 23	2704	65 28 58	2689	67 5 53	2674	68 43 8	2660
	Jupiter W.	45 0 55	2735	46 36 48	2720	48 13 1	2705	49 49 34	2691
	Spica η W.	9 55 51	2776	11 30 51	2741	13 6 36	2713	14 42 59	2689
	SUN E.	31 38 48	3078	30 10 12	3066	28 41 21	3054	27 12 15	3043
29	SUN W.	- - -	-	- - -	-	- - -	-	- - -	-
	Venus E.	27 21 42	2702	25 45 5	2698	24 8 22	2694	22 31 34	2692
	Fomalhaut E.	66 2 43	2561	64 22 54	2561	62 43 6	2564	61 3 21	2567
	α Pegasi E.	87 30 57	2646	85 53 4	2641	84 15 5	2637	82 37 0	2633
30	SUN W.	31 53 49	2627	33 32 7	2621	35 10 33	2615	36 49 8	2610
	Fomalhaut E.	52 46 17	2604	51 7 28	2618	49 28 58	2633	47 50 48	2652
	α Pegasi E.	74 25 55	2632	72 47 44	2636	71 9 38	2641	69 31 38	2646

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
18	α Arietis W.	96° 16' 58"	3105	97° 45' 2"	3109	99° 13' 1"	3114	100° 40' 54"	3119
	Aldebaran W.	65 51 40	3120	67 19 25	3123	68 47 7	3125	70 14 46	3128
	Pollux W.	21 38 50	3064	23 7 44	3067	24 36 34	3069	26 5 21	3071
	Regulus E.	15 31 40	3202	14 5 33	3239	- - -	- - -	- - -	- - -
	Jupiter E.	33 10 42	3110	31 42 44	3115	30 14 52	3119	28 47 6	3123
	Spica π E.	69 11 18	3056	67 42 15	3061	66 13 17	3065	64 44 24	3069
	SUN E.	103 47 2	3445	102 25 36	3449	101 4 15	3453	99 42 58	3457
19	Aldebaran W.	77 32 31	3133	79 0 1	3132	80 27 32	3131	81 55 4	3130
	Pollux W.	33 28 41	3078	34 57 17	3078	36 25 54	3078	37 54 31	3077
	Jupiter E.	21 29 23	3141	20 2 3	3144	18 34 47	3148	17 7 35	3153
	Spica π E.	57 20 52	3078	55 52 15	3078	54 23 38	3078	52 55 2	3078
	SUN E.	92 57 26	3467	91 36 25	3467	90 15 24	3468	88 54 24	3466
20	Aldebaran W.	89 13 13	3118	90 41 1	3114	92 8 53	3110	93 36 50	3106
	Pollux W.	45 18 4	3065	46 46 57	3061	48 15 54	3057	49 44 56	3052
	Spica π E.	45 31 39	3068	44 2 50	3065	42 33 57	3061	41 4 59	3056
	SUN E.	82 8 57	3455	80 47 43	3452	79 26 25	3447	78 5 2	3442
21	Aldebaran W.	100 58 5	3078	102 26 41	3071	103 55 26	3064	105 24 20	3057
	Pollux W.	57 11 47	3022	58 41 33	3014	60 11 28	3006	61 41 33	2998
	Regulus W.	20 50 4	3090	22 18 26	3074	23 47 8	3059	25 16 8	3045
	Spica π E.	33 38 41	3029	32 9 5	3022	30 39 20	3015	29 9 26	3009
	SUN E.	71 16 33	3410	69 54 28	3402	68 32 14	3394	67 9 51	3386
22	Aldebaran W.	112 51 9	3016	114 21 2	3006	115 51 7	2998	117 21 22	2989
	Pollux W.	69 14 43	2951	70 45 57	2940	72 17 25	2930	73 49 6	2918
	Regulus W.	32 45 15	2980	34 15 53	2967	35 46 47	2954	37 17 57	2942
	Spica π E.	21 37 44	2971	20 6 55	2965	18 35 58	2958	17 4 53	2951
	SUN E.	60 15 18	3337	58 51 49	3325	57 28 6	3313	56 4 10	3302
23	Pollux W.	81 31 15	2858	83 4 28	2845	84 37 58	2832	86 11 44	2818
	Regulus W.	44 57 57	2875	46 30 48	2860	48 3 58	2847	49 37 25	2834
	Jupiter W.	26 15 6	2909	27 47 13	2895	29 19 38	2881	30 52 21	2866
	SUN E.	49 1 1	3239	47 35 38	3226	46 10 0	3212	44 44 5	3199
24	Pollux W.	94 4 59	2750	95 40 33	2737	97 16 24	2722	98 52 35	2708
	Regulus W.	57 29 15	2761	59 4 34	2747	60 40 11	2732	62 16 8	2719
	Jupiter W.	38 40 36	2794	40 15 12	2779	41 50 7	2765	43 25 21	2750
	SUN E.	37 30 32	3131	36 3 0	3118	34 35 12	3105	33 7 8	3091
25	Regulus W.	70 20 42	2645	71 58 36	2632	73 36 47	2617	75 15 19	2603
	Jupiter W.	51 26 26	2676	53 3 38	2662	54 41 9	2647	56 19 0	2633
	Spica π W.	16 19 53	2668	17 57 16	2648	19 35 6	2631	21 19	2616
	SUN E.	25 42 55	3032	- - -	- - -	- - -	- - -	- - -	- - -
29	SUN W.	25 22 26	2661	26 59 58	2652	28 37 43	-	-	36
	Venus E.	20 54 43	2690	19 17 50	2690	17 40	-	-	20
	Fomalhaut E.	59 23 40	2571	57 44 5	2577	56 4	-	-	13
	α Pegasi E.	80 58 50	2631	79 20 37	2630	77 42	-	-	11
30	SUN W.	38 27 49	2607	40 6 35	2602	41 41	-	-	5
	Fomalhaut E.	46 13 3	2673	44 35 47	2698	42	-	-	3
	α Pegasi E.	67 53 45	2653	66 16 2	2661	64	-	-	1

CONFIGURATIONS OF THE SATELLITES OF JUPITER.

At 16^h, MEAN TIME.

Day of the Month.	<i>West.</i>				<i>East.</i>			
1	.4		3.	○	1.	2.		
2	.4	.3	2.	.1 ○				
3	.4	.3	.2	○				○ 1.
4		.4		○ .3 ○ .1	.2			
5			1.	.4 ○ 2.	.3			
6		.2		○	.1	.4	3.	
7		.1		○ .2	3.		.4	
8			3.	○	1.	2.		.4
9		3.	2.	.1 ○				4.
10		.3	.2	○ 1.				4.
11	● .1			.3 ○	.2		4.	
12			1.	○ 2.	.3	4.		
13		2.		○ .4 ○ .1	3.			
14			1. 4.	○	3.			● .2
15		4.	3.	○	1.	2.		
16		4.	3.	.1 2. ○				
17	4.	.3	.2	○ 1.				
18	.4			○	.2			.1 ●
19	.4			1 ○	2.	3.		
20		.4	2.	○	.1		3.	
21	● .2		.4 1.	○		3.		
22				3. ○ .4	.1	2.		
23		3.	.1 2.	○		.4		
24		.3	.2	○	1.		.4	
25			.3 .1	○	.2		.4	
26	○ 1.			○	2.	3.		4.
27			2.	○ .1		.3	4.	
28			1. 2	○		3.	4.	
29	3. ○			○	.1	.2 4.		
30	2. ○		3.	.1 ○	4.			

This Table represents, at 16^h after *Mean Noon* of each day of the month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

ECLIPSES OF THE SATELLITES OF JUPITER.

TELLITE.	Day of the Month.	Mean Time.	Sidereal Time.	PHASE as seen in an inverting Telescope.	
		^h ^m ^s	^h ^m ^s		
I.	2*	16 56 25.1	7 45 24.2	Im.	
	4	11 24 46.6	2 20 44.3	Im.	
	6	5 53 12.0	20 56 8.3	Im.	
	8	0 21 32.3	15 31 27.2	Im.	
	9	18 49 57.4	10 6 51.0	Im.	
	11	13 18 17.2	4 42 9.4	Im.	
	13	7 46 41.2	23 17 32.1	Im.	
	15	2 15 0.9	17 52 50.4	Im.	i
	16	20 43 25.0	12 28 13.2	Im.	*
	18*	15 11 43.4	7 3 30.2	Im.	
	20	9 40 6.8	1 38 52.2	Im.	
	22	4 8 25.7	20 14 9.7	Im.	
	23	22 36 48.3	14 49 31.0	Im.	
	25*	17 5 6.3	9 24 47.6	Im.	
	27	11 33 29.0	4 0 8.9	Im.	
	29	6 1 46.1	22 35 24.6	Im.	
II.	3	19 39 7.5	10 32 29.8	Im.	
	7	8 55 49.6	0 3 12.5	Im.	
	10	22 12 36.9	13 34 0.3	Im.	
	14	11 29 19.1	3 4 43.1	Im.	i
	18	0 46 8.5	16 35 33.1	Im.	*
	21*	14 2 53.0	6 6 18.1	Im.	
	25	3 19 46.0	19 37 11.7	Im.	
	28*	16 36 32.6	9 7 58.8	Im.	
III.	4	7 38 35.2	22 33 55.8	Im.	
	4	11 4 58.3	2 0 52.8	Em.	
	11	11 36 9.2	2 59 44.6	Im.	
	11*	15 2 7.4	6 26 16.6	Em.	i
	18*	15 34 12.9	7 26 3.4	Im.	*
	18	18 59 45.5	10 52 9.7	Em.	
	25	19 31 59.2	11 52 4.6	Im.	
	25	22 57 5.5	15 17 44.6	Em.	
IV.	5	6 22 6.9	21 21 11.4	Im. i	
	5	10 49 17.7	1 49 6.1	Em. *	e
	22	0 19 42.9	16 24 49.4	Im.	*
	22	4 43 28.3	20 49 18.1	Em.	

APPROXIMATE SIDEREAL TIMES
OF THE
OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER,
AND OF THE
TRANSITS OF THE SATELLITES AND THEIR SHADOWS
OVER THE DISC OF THE PLANET.

Satellite.	OCCULTATIONS.		TRANSITS OF SATELLITES.		TRANSITS OF SHADOWS.	
	Immersion.	Emersion.	Ingress.	Egress.	Ingress.	Egress.
	d h m	d h m	d h m	d h m	d h m	d h m
I.		1 16 30	1 11 24	1 13 43	1 10 21	1 12 41
		2 11 6	3* 6 0	3* 8 19	3 4 56	3* 7 16
		4* 5 42	5 0 36	5 2 56	5 23 31	5 1 51
		6 0 19	7 19 12	7 21 32	7 18 7	7 20 26
		8 18 55	8 13 49	9 16 8	8 12 42	8 15 2
		9 13 31	10* 8 25	10 10 44	10* 7 17	10* 9 37
	In	11* 8 7	12 3 1	12 5 20	12 1 52	12 4 12
		13 2 43	14 21 37	14 23 56	14 20 28	14 22 47
	the	15 21 19	16 16 13	16 18 32	15 15 3	16 17 23
		17 15 55	17 10 49	17 13 8	17* 9 38	17 11 58
	Shadow.	18 10 31	19 5 24	19* 7 44	19 4 13	19* 6 33
		20 5 7	21 0 0	21 2 20	21 22 48	21 1 8
		22 23 43	23 18 36	23 20 55	23 17 24	23 19 44
		24 18 19	24 13 12	24 15 31	24 11 59	24 14 19
		25 12 55	26* 7 48	26* 10 7	26* 6 34	26* 8 54
		27* 7 31	28 2 23	28 4 42	28 1 9	28 3 29
		29 2 6	30 20 59	30 23 18	30 19 45	30 22 5
II.		4 15 28	2 18 12	2 21 3	2 16 7	2 18 59
	In	7 5 3	5* 7 48	5 10 39	5* 5 39	5* 8 31
		11 18 37	9 21 23	9 0 14	9 19 10	9 22 3
	the	14* 8 10	12 10 59	12 13 49	12* 8 42	12 11 35
		18 21 44	16 0 34	16 3 23	16 22 13	16 1 6
	Shadow.	21 11 17	19 14 8	20 16 57	19 11 45	19 14 37
		25 0 50	23 3 42	23* 6 31	23 1 16	23 4 9
		28 14 22	27 17 16	27 20 4	26 14 48	27 17 40
III.			30* 6 48	30* 9 37	30 4 19	30* 7 11
		4 2 50	0 12 18	1 15 51	7 12 32	8 16 8
		11* 7 31	8 17 1	8 20 33	15 16 58	15 20 34
		18 12 10	15 21 41	15 1 12	22 21 23	22 0 59
		26 16 45	22 2 17	22* 5 47	29 1 49	29 5 24
IV.			29* 6 50	29* 10 18		
		5* 7 35	14 15 52	14 20 13	13 4 57	13* 9 35
		22 3 50	30 11 46	30 15 55	30 0 1	30 4 36

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^h .778395. Days.	From Mean Noon of January 1.	
	At Mean Midnight,						Day of the Year.	Fraction of the Year.
	Logarithm of							
	A	B	C	D				
1	+1°1594	+1°1113	+9°8365	-0°9369	9 16 13°11	223	304	°832
2	1°1530	1°1204	9°8383	0°9361	9 12 17°20	224	305	°835
3	1°1464	1°1292	9°8401	0°9353	9 8 21°28	225	306	°838
4	+1°1396	+1°1376	+9°8420	-0°9345	9 4 25°37	226	307	°841
5	1°1325	1°1458	9°8438	0°9337	9 0 29°45	227	308	°843
6	1°1252	1°1537	9°8457	0°9329	8 56 33°54	228	309	°846
7	+1°1176	+1°1614	+9°8475	-0°9321	8 52 37°64	229	310	°849
8	1°1098	1°1688	9°8494	0°9313	8 48 41°73	230	311	°851
9	1°1016	1°1759	9°8513	0°9304	8 44 45°83	231	312	°854
10	+1°0932	+1°1828	+9°8532	-0°9296	8 40 49°92	232	313	°857
11	1°0844	1°1894	9°8551	0°9288	8 36 54°02	233	314	°860
12	1°0753	1°1958	9°8571	0°9280	8 32 58°11	234	315	°862
13	+1°0659	+1°2020	+9°8590	-0°9272	8 29 2°19	235	316	°865
14	1°0561	1°2080	9°8609	0°9264	8 25 6°28	236	317	°868
15	1°0460	1°2138	9°8629	0°9256	8 21 10°36	237	318	°871
16	+1°0355	+1°2194	+9°8648	-0°9248	8 17 14°44	238	319	°873
17	1°0246	1°2247	9°8668	0°9240	8 13 18°53	239	320	°876
18	1°0132	1°2299	9°8688	0°9232	8 9 22°61	240	321	°879
19	+1°0014	+1°2349	+9°8708	-0°9224	8 5 26°70	241	322	°882
20	0°9892	1°2396	9°8728	0°9217	8 1 30°79	242	323	°884
21	0°9764	1°2442	9°8748	0°9210	7 57 34°88	243	324	°887
22	+0°9631	+1°2486	+9°8768	-0°9203	7 53 38°98	244	325	°890
23	0°9492	1°2529	9°8788	0°9196	7 49 43°07	245	326	°893
24	0°9347	1°2570	9°8808	0°9189	7 45 47°16	246	327	°895
25	+0°9196	+1°2609	+9°8828	-0°9182	7 41	247	328	°898
26	0°9038	1°2646	9°8849	0°9176	7	248	329	°901
27	0°8873	1°2682	9°8869	0°9169	7	9	330	°904
28	+0°8699	+1°2716	+9°8889	-0°9163			331	
29	0°8517	1°2748	9°8910	0°9158			332	
30	0°8325	1°2779	9°8930	0°9152			333	
31	+0°8123	+1°2808	+9°8951	-0°9147			334	

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subd. from added to Apparent Time.	Diff. for 1 h
		Right Ascension.	Diff. for 1 hour.	Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Frid.	1	16 29 48 '31	10 '822	S. 21 50 38 '3	22 '72	1 10 '22	10 42 '17	0 '9
Sat.	2	16 34 8 '03	10 '847	21 59 43 '6	21 '66	1 10 '30	10 19 '08	0 '9
Sun.	3	16 38 28 '35	10 '871	22 8 23 '5	20 '58	1 10 '38	9 55 '38	1 '0
Mon.	4	16 42 49 '26	10 '894	22 16 37 '5	19 '50	1 10 '46	9 31 '09	1 '0
Tues.	5	16 47 10 '71	10 '915	22 24 25 '5	18 '40	1 10 '54	9 6 '27	1 '0
Wed.	6	16 51 32 '68	10 '936	22 31 47 '2	17 '30	1 10 '61	8 40 '92	1 '0
Thur.	7	16 55 55 '14	10 '957	22 38 42 '4	16 '19	1 10 '68	8 15 '08	1 '0
Frid.	8	17 0 18 '10	10 '975	22 45 11 '0	15 '07	1 10 '74	7 48 '74	1 '1
Sat.	9	17 4 41 '51	10 '993	22 51 12 '6	13 '94	1 10 '80	7 21 '97	1 '1
Sun.	10	17 9 5 '33	11 '010	22 56 47 '2	12 '81	1 10 '86	6 54 '78	1 '1
Mon.	11	17 13 29 '58	11 '025	23 1 54 '6	11 '67	1 10 '92	6 27 '17	1 '1
Tues.	12	17 17 54 '18	11 '040	23 6 34 '6	10 '52	1 10 '97	5 59 '21	1 '1
Wed.	13	17 22 19 '13	11 '053	23 10 47 '1	9 '37	1 11 '01	5 30 '90	1 '1
Thur.	14	17 26 44 '39	11 '065	23 14 32 '0	8 '21	1 11 '05	5 2 '28	1 '2
Frid.	15	17 31 9 '95	11 '075	23 17 49 '1	7 '05	1 11 '08	4 33 '37	1 '2
Sat.	16	17 35 35 '76	11 '085	23 20 38 '3	5 '88	1 11 '11	4 4 '20	1 '2
Sun.	17	17 40 1 '79	11 '093	23 22 59 '5	4 '71	1 11 '14	3 34 '80	1 '2
Mon.	18	17 44 28 '03	11 '100	23 24 52 '6	3 '54	1 11 '16	3 5 '20	1 '2
Tues.	19	17 48 54 '44	11 '106	23 26 17 '5	2 '36	1 11 '18	2 35 '43	1 '2
Wed.	20	17 53 20 '98	11 '110	23 27 14 '2	1 '18	1 11 '19	2 5 '52	1 '2
Thur.	21	17 57 47 '62	11 '113	23 27 42 '5	0 '00	1 11 '19	1 35 '51	1 '2
Frid.	22	18 2 14 '33	11 '114	23 27 42 '5	1 '18	1 11 '20	1 5 '45	1 '2
Sat.	23	18 6 41 '06	11 '114	23 27 14 '2	2 '37	1 11 '20	0 35 '35	1 '2
Sun.	24	18 11 7 '79	11 '112	23 26 17 '4	3 '54	1 11 '19	0 5 '26	1 '2
Mon.	25	18 15 34 '47	11 '108	23 24 52 '4	4 '73	1 11 '18	0 24 '76	1 '2
Tues.	26	18 20 1 '07	11 '104	23 22 59 '0	5 '90	1 11 '17	0 54 '72	1 '2
Wed.	27	18 24 27 '56	11 '096	23 20 37 '4	7 '07	1 11 '15	1 24 '57	1 '2
Thur.	28	18 28 53 '87	11 '088	23 17 47 '7	8 '25	1 11 '13	1 54 '23	1 '2
Frid.	29	18 33 19 '98	11 '078	23 14 29 '8	9 '41	1 11 '10	2 23 '70	1 '2
Sat.	30	18 37 45 '85	11 '067	23 10 43 '9	10 '58	1 11 '07	2 52 '93	1 '2
Sun.	31	18 42 11 '45	11 '053	23 6 30 '1	11 '73	1 11 '03	3 21 '89	1 '1
Mon.	32	18 46 36 '73		S. 23 1 48 '6		1 10 '79	3 50 '54	

* Mean Time of the Semidiameter passing may be found by subtracting 0'19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to subt. from Mean Time.	Sidereal Time.
		Right Ascension.	Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Frid.	1	16 29 50·24	S. 21 50 42·5	16 15·0	10 42·00	16 40 32·24
Sat.	2	16 34 9·89	21 59 47·5	16 15·1	10 18·91	16 44 28·80
Sun.	3	16 38 30·15	22 8 27·0	16 15·3	9 55·21	16 48 25·36
Mon.	4	16 42 50·99	22 16 40·7	16 15·4	9 30·93	16 52 21·92
Tues.	5	16 47 12·36	22 24 28·4	16 15·5	9 6·11	16 56 18·47
Wed.	6	16 51 34·26	22 31 49·8	16 15·7	8 40·76	17 0 15·02
Thur.	7	16 55 56·65	22 38 44·7	16 15·8	8 14·93	17 4 11·58
Frid.	8	17 0 19·53	22 45 13·0	16 15·9	7 48·60	17 8 8·13
Sat.	9	17 4 42·86	22 51 14·4	16 16·1	7 21·83	17 12 4·69
Sun.	10	17 9 6·60	22 56 48·7	16 16·2	6 54·65	17 16 1·25
Mon.	11	17 13 30·76	23 1 55·9	16 16·3	6 27·05	17 19 57·81
Tues.	12	17 17 55·28	23 6 35·7	16 16·4	5 59·10	17 23 54·38
Wed.	13	17 22 20·15	23 10 48·1	16 16·5	5 30·79	17 27 50·94
Thur.	14	17 26 45·32	23 14 32·7	16 16·6	5 2·18	17 31 47·50
Frid.	15	17 31 10·79	23 17 49·7	16 16·6	4 33·28	17 35 44·07
Sat.	16	17 35 36·51	23 20 38·7	16 16·7	4 4·12	17 39 40·63
Sun.	17	17 40 2·45	23 22 59·8	16 16·8	3 34·73	17 43 37·18
Mon.	18	17 44 28·60	23 24 52·8	16 16·8	3 5·14	17 47 33·74
Tues.	19	17 48 54·92	23 26 17·6	16 16·9	2 35·38	17 51 30·30
Wed.	20	17 53 21·37	23 27 14·2	16 16·9	2 5·48	17 55 26·85
Thur.	21	17 57 47·92	23 27 42·5	16 17·0	1 35·48	17 59 23·40
Frid.	22	18 2 14·53	23 27 42·5	16 17·1	1 5·43	18 3 19·96
Sat.	23	18 6 41·17	23 27 14·1	16 17·1	0 35·34	18 7 16·51
Sun.	24	18 11 7·81	23 26 17·4	16 17·1	0 5·26	18 11 13·07
Mon.	25	18 15 34·39	23 24 52·4	16 17·2	0 24·	9·64
Tues.	26	18 20 0·90	23 22 59·1	16 17·2	0 5·	5·20
Wed.	27	18 24 27·30	23 20 37·6	16 17·2	1	·76
Thur.	28	18 28 53·52	23 17 47·9	16 17·2		·3
Frid.	29	18 33 19·54	23 14 30·1	16 17·3		·2
Sat.	30	18 37 45·32	23 10 44·4	16 17·3		·5
Sun.	31	18 42 10·83	23 6 30·8	16 17·3		
Mon.	32	18 46 36·02	S. 23 1 49·4	16 17·3		

* The Semidiameter for *Apparent Noon* may be assume

MEAN TIME.

Day of the Week.	Day of the Month.	THE MOON'S					
		Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
		[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	^d	^h ^m
Frid.	1	293 59 3·9	301 9 7·8	S. 5 6 55·8	S. 5 2 45·5	3·4	3 14·8
Sat.	2	308 19 4·5	315 28 23·9	4 53 51·1	4 40 21·4	4·4	4 13·7
Sun.	3	322 36 40·6	329 43 32·6	4 22 31·7	4 0 41·4	5·4	5 8·4
Mon.	4	336 48 43·8	343 52 2·5	3 35 14·0	3 6 35·4	6·4	5 59·2
Tues.	5	350 53 20·9	357 52 33·6	2 35 15·4	2 1 44·8	7·4	6 47·3
Wed.	6	4 49 38·1	11 44 31·7	1 26 36·0	S. 0 50 22·6	8·4	7 34·0
Thur.	7	18 37 14·4	25 27 43·0	S. 0 13 37·8	N. 0 23 5·2	9·4	8 20·7
Frid.	8	32 15 55·1	39 1 46·7	N. 0 59 13·7	1 34 17·0	10·4	9 8·7
Sat.	9	45 45 12·6	52 26 5·4	2 7 45·6	2 39 12·8	11·4	9 58·9
Sun.	10	59 4 17·2	65 39 37·4	3 8 14·4	3 34 29·1	12·4	10 51·8
Mon.	11	72 11 57·5	78 41 7·8	3 57 39·5	4 17 31·3	13·4	11 46·7
Tues.	12	85 7 0·3	91 29 28·2	4 33 54·3	4 46 41·0	14·4	12 42·4
Wed.	13	97 48 27·8	104 3 58·5	4 55 47·9	5 1 14·9	15·4	13 37·2
Thur.	14	110 16 3·4	116 24 49·3	5 3 4·1	5 1 20·2	16·4	14 29·3
Frid.	15	122 30 27·3	128 33 12·8	4 56 9·8	4 47 41·4	17·4	15 17·9
Sat.	16	134 33 25·4	140 31 28·2	4 36 4·4	4 21 29·6	18·4	16 3·1
Sun.	17	146 27 48·7	152 22 57·1	4 4 7·8	3 44 10·9	19·4	16 45·3
Mon.	18	158 17 27·5	164 11 55·6	3 21 51·0	2 57 20·4	20·4	17 25·6
Tues.	19	170 6 59·5	176 3 18·8	2 30 52·3	2 2 39·8	21·4	18 5·0
Wed.	20	182 1 34·9	188 2 29·2	1 32 57·3	N. 1 2 0·0	22·4	18 44·7
Thur.	21	194 6 42·4	200 14 55·9	N. 0 30 3·9	S. 0 2 32·7	23·4	19 26·0
Frid.	22	206 27 47·5	212 45 52·5	S. 0 35 31·2	1 8 29·0	24·4	20 10·3
Sat.	23	219 9 42·8	225 39 43·0	1 41 3·3	2 12 47·8	25·4	20 59·0
Sun.	24	232 16 13·4	238 59 24·9	2 43 15·2	3 11 54·9	26·4	215·9
Mon.	25	245 49 18·7	252 45 46·5	3 38 16·7	4 1 48·3	27·4	22 52·2
Tues.	26	259 48 27·8	266 56 52·7	4 21 59·8	4 38 20·9	28·4	23 55·6
Wed.	27	274 10 19·3	281 27 57·1	4 50 26·8	4 57 53·9	29·4	24 58·9
Thur.	28	288 48 47·7	296 11 48·8	5 0 33·2	4 58 10·4	30·4	25 59·2
Frid.	29	303 35 55·3	311 0 2·1	4 50 47·2	3 38 30·4	31·4	26 59·6
Sat.	30	318 23 9·2	325 44 22·0	4 21 35·3	2 0 22·5	32·4	27 59·9
Sun.	31	333 2 53·6	340 18 7·7	3 35 18·5	2 6 33·7	33·4	28 59·7
Mon.	32	347 29 35·1	354 36 58·1	S. 2 35 22·5	2 2 23·1	34·4	29 59·6

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 5.				THURSDAY 7.			
0	h m s 23 30 37.41	S. 5 59 32.4	163.30	0	h m s 1 9 2.99	N. 7 5 37.3	158.58
1	23 32 42.28	5 43 12.6	163.52	1	1 11 6.20	7 21 28.8	158.17
2	23 34 46.98	5 26 51.5	163.73	2	1 13 9.51	7 37 17.8	157.73
3	23 36 51.53	5 10 29.1	163.93	3	1 15 12.91	7 53 4.2	157.28
4	23 38 55.92	4 54 5.5	164.12	4	1 17 16.41	8 8 47.9	156.82
5	23 41 0.18	4 37 40.8	164.27	5	1 19 20.02	8 24 28.8	156.33
6	23 43 4.29	4 21 15.2	164.43	6	1 21 23.74	8 40 6.8	155.85
7	23 45 8.26	4 4 48.6	164.57	7	1 23 27.58	8 55 41.9	155.35
8	23 47 12.11	3 48 21.2	164.70	8	1 25 31.53	9 11 14.0	154.83
9	23 49 15.83	3 31 53.0	164.80	9	1 27 35.61	9 26 43.0	154.32
10	23 51 19.44	3 15 24.2	164.90	10	1 29 39.82	9 42 8.9	153.75
11	23 53 22.93	2 58 54.8	164.98	11	1 31 44.15	9 57 31.4	153.22
12	23 55 26.32	2 42 24.9	165.05	12	1 33 48.63	10 12 50.7	152.63
13	23 57 29.61	2 25 54.6	165.12	13	1 35 53.25	10 28 6.5	152.07
14	23 59 32.80	2 9 23.9	165.15	14	1 37 58.01	10 43 18.9	151.47
15	0 1 35.90	1 52 53.0	165.18	15	1 40 2.92	10 58 27.7	150.87
16	0 3 38.92	1 36 21.9	165.20	16	1 42 7.99	11 13 32.9	150.23
17	0 5 41.85	1 19 50.7	165.18	17	1 44 13.21	11 28 34.3	149.62
18	0 7 44.72	1 3 19.6	165.18	18	1 46 18.59	11 43 32.0	148.97
19	0 9 47.51	0 46 48.5	165.17	19	1 48 24.14	11 58 25.8	148.30
20	0 11 50.24	0 30 17.5	165.10	20	1 50 29.86	12 13 15.6	147.63
21	0 13 52.92	S. 0 13 46.9	165.07	21	1 52 35.74	12 28 1.4	146.95
22	0 15 55.54	N. 0 2 43.5	164.98	22	1 54 41.81	12 42 43.1	146.25
23	0 17 58.12	N. 0 19 13.4	164.92	23	1 56 48.05	N. 12 57 20.6	145.53
WEDNESDAY 6.				FRIDAY 8.			
0	0 20 0.65	N. 0 35 42.9	164.82	0	1 58 54.48	N. 13 11 53.8	144.82
1	0 22 3.15	0 52 11.8	164.70	1	2 1 1.09	13 26 22.7	144.08
2	0 24 5.62	1 8 40.0	164.58	2	2 3 7.90	13 40 47.2	143.33
3	0 26 8.06	1 25 7.5	164.45	3	2 5 14.89	13 55 7.2	142.57
4	0 28 10.48	1 41 34.2	164.30	4	2 7 22.09	14 9 22.6	141.80
5	0 30 12.89	1 58 0.0	164.13	5	2 9 29.48	14 23 33.4	141.00
6	0 32 15.29	2 14 24.8	163.97	6	2 11 37.07	14 37 39.4	140.20
7	0 34 17.69	2 30 48.6	163.78	7	2 13 44.88	14 51 40.6	139.40
8	0 36 20.09	2 47 11.3	163.58	8	2 15 52.89	15 5 37.0	138.57
9	0 38 22.49	3 3 32.8	163.37	9	2 18 1.11	15 19 28.4	137.72
10	0 40 24.91	3 19 53.0	163.13	10	2 20 9.55	15 33 14.7	136.87
11	0 42 27.35	3 36 11.8	162.90	11	2 22 18.21	15 46 55.9	136.00
12	0 44 29.81	3 52 29.2	162.65	12	2 24 27.08	16 0 31.9	135.12
13	0 46 32.30	4 8 45.1	162.38	13	2 26 36.18	16 14 2.6	134.23
14	0 48 34.83	4 24 59.4	162.10	14	2 28 45.50	16 27 28.0	133.33
15	0 50 37.39	4 41 12.0	161.82	15	2 30 55.05	16 40 48.0	132.40
16	0 52 39.99	4 57 22.9	161.50	16	2 33 4.82	16 54 2.4	131.48
17	0 54 42.65	5 13 31.9	161.20	17	2 35 14.83	17 7 3.3	130.53
18	0 56 45.36	5 29 39.1	160.85	18	2 37 25.08	17 20 5.5	129.57
19	0 58 48.12	5 45 44.2	160.52	19	2 39 35.55	17 33 27.9	128.62
20	1 0 50.95	6 1 47.3	160.15	20	2 41 46.26	17 46 1.6	127.63
21	1 2 53.85	6 17 48.2	159.78	21	2 43 57.21	17 58 4.4	126.63
22	1 4 56.82	6 33 46.9	159.40	22	2 46 8.40	18 10 5.3	125.62
23	1 6 59.86	6 49 43.3	159.00	23	2 48 19.58	18 22 5.6	124.62
24	1 9 2.99	N. 7 5 37.3		24	2 50 31.33		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
SATURDAY 9.				MONDAY 11.			
	<i>h m s</i>	<i>° ′ ″</i>	<i>″</i>		<i>h m s</i>	<i>° ′ ″</i>	<i>″</i>
0	2 50 31.50	N.18 36 30.6	123.58	0	4 40 30.92	N.26 12 10.2	61.10
1	2 52 43.41	18 48 52.1	122.53	1	4 42 53.40	26 18 16.8	59.60
2	2 54 55.57	19 1 7.3	121.48	2	4 45 16.02	26 24 14.4	58.07
3	2 57 7.97	19 13 16.2	120.40	3	4 47 38.77	26 30 2.8	56.53
4	2 59 20.62	19 25 18.6	119.33	4	4 50 1.66	26 35 42.0	55.02
5	3 1 33.52	19 37 14.6	118.23	5	4 52 24.66	26 41 12.1	53.47
6	3 3 46.66	19 49 4.0	117.13	6	4 54 47.79	26 46 32.9	51.92
7	3 6 0.06	20 0 46.8	116.02	7	4 57 11.03	26 51 44.4	50.38
8	3 8 13.70	20 12 22.9	114.90	8	4 59 34.37	26 56 46.7	48.82
9	3 10 27.59	20 23 52.3	113.75	9	5 1 57.82	27 1 39.6	47.28
10	3 12 41.73	20 35 14.8	112.58	10	5 4 21.36	27 6 23.3	45.70
11	3 14 56.12	20 46 30.3	111.43	11	5 6 44.99	27 10 57.5	44.15
12	3 17 10.76	20 57 38.9	110.25	12	5 9 8.70	27 15 22.4	42.58
13	3 19 25.65	21 8 40.4	109.07	13	5 11 32.49	27 19 37.9	41.00
14	3 21 40.79	21 19 34.8	107.87	14	5 13 56.35	27 23 43.9	39.45
15	3 23 56.17	21 30 22.0	106.67	15	5 16 20.26	27 27 40.6	37.85
16	3 26 11.80	21 41 2.0	105.43	16	5 18 44.24	27 31 27.7	36.28
17	3 28 27.68	21 51 34.6	104.20	17	5 21 8.26	27 35 5.4	34.72
18	3 30 43.81	22 1 59.8	102.95	18	5 23 32.33	27 38 33.7	33.12
19	3 33 0.17	22 12 17.5	101.70	19	5 25 56.43	27 41 52.4	31.53
20	3 35 16.79	22 22 27.7	100.43	20	5 28 20.56	27 45 1.6	29.95
21	3 37 33.64	22 32 30.3	99.15	21	5 30 44.71	27 48 1.3	28.38
22	3 39 50.73	22 42 25.2	97.87	22	5 33 8.88	27 50 51.6	26.77
23	3 42 8.06	N.22 52 12.4	96.57	23	5 35 33.05	N.27 53 32.2	25.20
SUNDAY 10.				TUESDAY 12.			
	<i>h m s</i>	<i>° ′ ″</i>	<i>″</i>		<i>h m s</i>	<i>° ′ ″</i>	<i>″</i>
0	3 44 25.63	N.23 1 51.8	95.25	0	5 37 57.23	N.27 56 3.4	23.60
1	3 46 43.43	23 11 23.3	93.95	1	5 40 21.40	27 58 25.0	22.02
2	3 49 1.46	23 20 47.0	92.60	2	5 42 45.55	28 0 37.1	20.43
3	3 51 19.72	23 30 2.6	91.27	3	5 45 9.69	28 2 39.7	18.83
4	3 53 38.21	23 39 10.2	89.92	4	5 47 33.79	28 4 32.7	17.25
5	3 55 56.92	23 48 9.7	88.55	5	5 49 57.86	28 6 16.2	15.67
6	3 58 15.86	23 57 1.0	87.20	6	5 52 21.89	28 7 50.2	14.08
7	4 0 35.01	24 5 44.2	85.80	7	5 54 45.87	28 9 14.7	12.52
8	4 2 54.38	24 14 19.0	84.43	8	5 57 9.80	28 10 29.8	10.92
9	4 5 13.97	24 22 45.6	83.02	9	5 59 33.66	28 11 35.3	9.33
10	4 7 33.76	24 31 3.7	81.63	10	6 1 57.45	28 12 31.3	7.77
11	4 9 53.76	24 39 13.5	80.20	11	6 4 21.17	28 13 17.9	6.20
12	4 12 13.97	24 47 14.7	78.78	12	6 6 44.80	28 13 55.1	4.62
13	4 14 34.38	24 55 7.4	77.35	13	6 9 8.34	28 14 22.8	3.05
14	4 16 54.99	25 2 51.5	75.92	14	6 11 31.78	28 14 41.1	1.50
15	4 19 15.79	25 10 27.0	74.47	15	6 13 55.12	28 14 50.1	0.08
16	4 21 36.77	25 17 53.8	73.02	16	6 16 18.34	28 14 49.6	1.63
17	4 23 57.94	25 25 11.9	71.55	17	6 18 41.44	28 14 39.8	3.17
18	4 26 19.30	25 32 21.2	70.08	18	6 21 4.42	28 14 20.8	4.73
19	4 28 40.82	25 39 21.7	68.60	19	6 23 27.26	28 13 52.4	6.28
20	4 31 2.52	25 46 13.3	67.12	20	6 25 49.97	28 13 14.7	7.82
21	4 33 24.38	25 52 56.0	65.62	21	6 28 12.53	28 12 27.8	9.33
22	4 35 46.41	25 59 29.7	64.13	22	6 30 34.94	28 11 31.8	10.88
23	4 38 8.59	26 5 54.5	62.62	23	6 32 57.19	28 10 26.5	12.40
24	4 40 30.92	N.26 12 10.2		24	6 35 19.27	N.28 9 12.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 13.				FRIDAY 15.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	6 35 19.27	N.28 9 12.1	13.92	0	8 24 4.20	N.24 25 19.1	77.13
1	6 37 41.18	28 7 48.6	15.43	1	8 26 12.54	24 17 36.3	78.22
2	6 40 2.91	28 6 16.0	16.93	2	8 28 20.53	24 9 47.0	79.27
3	6 42 24.46	28 4 34.4	18.43	3	8 30 28.18	24 1 51.4	80.32
4	6 44 45.82	28 2 43.8	19.93	4	8 32 35.49	23 53 49.5	81.38
5	6 47 6.98	28 0 44.2	21.42	5	8 34 42.46	23 45 41.2	82.40
6	6 49 27.94	27 58 35.7	22.90	6	8 36 49.09	23 37 26.8	83.42
7	6 51 48.69	27 56 18.3	24.37	7	8 38 55.37	23 29 6.3	84.43
8	6 54 9.23	27 53 52.1	25.83	8	8 41 1.32	23 20 39.7	85.43
9	6 56 29.54	27 51 17.1	27.30	9	8 43 6.92	23 12 7.1	86.42
10	6 58 49.63	27 48 33.3	28.73	10	8 45 12.18	23 3 28.6	87.42
11	7 1 9.50	27 45 40.9	30.20	11	8 47 17.10	22 54 44.1	88.37
12	7 3 29.12	27 42 39.7	31.63	12	8 49 21.68	22 45 53.9	89.33
13	7 5 48.50	27 39 29.9	33.05	13	8 51 25.92	22 36 57.9	90.28
14	7 8 7.64	27 36 11.6	34.48	14	8 53 29.83	22 27 56.2	91.22
15	7 10 26.53	27 32 44.7	35.88	15	8 55 33.40	22 18 48.9	92.13
16	7 12 45.16	27 29 9.4	37.30	16	8 57 36.63	22 9 36.1	93.07
17	7 15 3.53	27 25 25.6	38.68	17	8 59 39.53	22 0 17.7	93.97
18	7 17 21.63	27 21 33.5	40.08	18	9 1 42.10	21 50 53.9	94.87
19	7 19 39.47	27 17 33.0	41.45	19	9 3 44.34	21 41 24.7	95.75
20	7 21 57.03	27 13 24.3	42.82	20	9 5 46.25	21 31 50.2	96.62
21	7 24 14.31	27 9 7.4	44.18	21	9 7 47.83	21 22 10.5	97.50
22	7 26 31.32	27 4 42.3	45.53	22	9 9 49.08	21 12 25.5	98.33
23	7 28 48.03	N.27 0 9.1	46.87	23	9 11 50.01	N.21 2 35.5	99.20
THURSDAY 14.				SATURDAY 16.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	7 31 4.46	N.26 55 27.9	48.20	0	9 13 50.61	N.20 52 40.3	100.03
1	7 33 20.59	26 50 38.7	49.53	1	9 15 50.89	20 42 40.1	100.85
2	7 35 36.43	26 45 41.5	50.83	2	9 17 50.85	20 32 35.0	101.67
3	7 37 51.96	26 40 36.5	52.13	3	9 19 50.50	20 22 25.0	102.47
4	7 40 7.19	26 35 23.7	53.43	4	9 21 49.83	20 12 10.2	103.28
5	7 42 22.11	26 30 3.1	54.72	5	9 23 48.85	20 1 50.5	104.05
6	7 44 36.73	26 24 34.8	56.00	6	9 25 47.56	19 51 26.2	104.83
7	7 46 51.03	26 18 58.8	57.25	7	9 27 45.96	19 40 57.2	105.62
8	7 49 5.02	26 13 15.3	58.50	8	9 29 44.06	19 30 23.5	106.35
9	7 51 18.68	26 7 24.3	59.75	9	9 31 41.86	19 19 45.4	107.12
10	7 53 32.03	26 1 25.8	60.98	10	9 33 39.35	19 9 2.7	107.85
11	7 55 45.06	25 55 19.9	62.20	11	9 35 36.55	18 58 15.6	108.58
12	7 57 57.76	25 49 6.7	63.42	12	9 37 33.45	18 47 24.1	109.30
13	8 0 10.13	25 42 46.2	64.62	13	9 39 30.06	18 36 28.3	110.02
14	8 2 22.18	25 36 18.5	65.80	14	9 41 26.38	18 25 28.2	110.72
15	8 4 33.89	25 29 43.7	66.98	15	9 43 22.42	18 14 23.9	111.42
16	8 6 45.27	25 23 1.8	68.15	16	9 45 18.17	18 3.4	112.10
17	8 8 56.32	25 16 12.9	69.32	17	9 47 13.64	17 52.8	112.77
18	8 11 7.03	25 9 17.0	70.47	18	9 49 9.84	17 41.2	113.43
19	8 13 17.40	25 2 14.2	71.60	19	9 51 6.37	17 29.6	114.10
20	8 15 27.44	24 55 4.6	72.73	20	9 53 3.41	17 18.0	114.75
21	8 17 37.14	24 47 48.2	73.85	21	9 55 52.79	17 6.3	115.38
22	8 19 46.50	24 40 25.1	74.95	22	9 57 46.91	16 54.2	116.02
23	8 21 55.52	24 32 55.4	76.03	23	9 59 40.77	16 42.0	116.65
24	8 24 4.20	N.24 25 19.1		24	10 1 34.87	16 29.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 17.				TUESDAY 19.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	10 0 34.37	N. 16 31 44.2	117.25	0	11 27 39.29	N. 6 13 48.1	137.90
1	10 2 27.71	16 20 0.7	117.87	1	11 29 25.09	6 0 0.7	138.17
2	10 4 20.81	16 8 13.5	118.47	2	11 31 10.84	5 46 11.7	138.42
3	10 6 13.66	15 56 22.7	119.05	3	11 32 56.55	5 32 21.2	138.68
4	10 8 6.26	15 44 28.4	119.63	4	11 34 42.21	5 18 29.1	138.92
5	10 9 58.63	15 32 30.6	120.22	5	11 36 27.84	5 4 35.6	139.15
6	10 11 50.75	15 20 29.3	120.77	6	11 38 13.43	4 50 40.7	139.38
7	10 13 42.65	15 8 24.7	121.33	7	11 39 59.00	4 36 44.4	139.60
8	10 15 34.31	14 56 16.7	121.88	8	11 41 44.55	4 22 46.8	139.83
9	10 17 25.75	14 44 5.4	122.42	9	11 43 30.07	4 8 47.8	140.03
10	10 19 16.98	14 31 50.9	122.95	10	11 45 15.59	3 54 47.6	140.25
11	10 21 7.98	14 19 33.2	123.48	11	11 47 1.10	3 40 46.1	140.43
12	10 22 58.77	14 7 12.3	124.00	12	11 48 46.60	3 26 43.5	140.63
13	10 24 49.35	13 54 48.3	124.52	13	11 50 32.10	3 12 39.7	140.82
14	10 26 39.72	13 42 21.2	125.00	14	11 52 17.61	2 58 34.8	141.00
15	10 28 29.89	13 29 51.2	125.52	15	11 54 3.13	2 44 28.8	141.17
16	10 30 19.87	13 17 18.1	126.00	16	11 55 48.67	2 30 21.8	141.35
17	10 32 9.65	13 4 42.1	126.47	17	11 57 34.22	2 16 13.7	141.50
18	10 33 59.23	12 52 3.3	126.95	18	11 59 19.81	2 2 4.7	141.65
19	10 35 48.64	12 39 21.6	127.42	19	12 1 5.42	1 47 54.8	141.80
20	10 37 37.86	12 26 37.1	127.88	20	12 2 51.06	1 33 44.0	141.93
21	10 39 26.90	12 13 49.8	128.32	21	12 4 36.75	1 19 32.4	142.08
22	10 41 15.77	12 0 59.9	128.78	22	12 6 22.48	1 5 19.9	142.20
23	10 43 4.47	N. 11 48 7.2	129.20	23	12 8 8.26	N. 0 51 6.7	142.32
MONDAY 18.				WEDNESDAY 20.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	10 44 53.00	N. 11 35 12.0	129.63	0	12 9 54.10	N. 0 36 52.8	142.43
1	10 46 41.37	11 22 14.2	130.07	1	12 11 40.00	0 22 38.2	142.55
2	10 48 29.59	11 9 13.8	130.47	2	12 13 25.96	N. 0 8 22.9	142.65
3	10 50 17.65	10 56 11.0	130.88	3	12 15 11.99	S. 0 5 53.0	142.73
4	10 52 5.56	10 43 5.7	131.28	4	12 16 58.10	0 20 9.4	142.83
5	10 53 53.33	10 29 58.0	131.68	5	12 18 44.28	0 34 26.4	142.90
6	10 55 40.95	10 16 47.9	132.07	6	12 20 30.55	0 48 43.8	142.98
7	10 57 28.45	10 3 35.5	132.45	7	12 22 16.91	1 3 1.7	143.05
8	10 59 15.81	9 50 20.8	132.82	8	12 24 3.36	1 17 20.0	143.10
9	11 1 3.04	9 37 3.9	133.18	9	12 25 49.91	1 31 38.6	143.17
10	11 2 50.15	9 23 44.8	133.55	10	12 27 36.57	1 45 57.6	143.20
11	11 4 37.14	9 10 23.5	133.90	11	12 29 23.33	2 0 16.8	143.25
12	11 6 24.02	8 57 0.1	134.25	12	12 31 10.21	2 14 36.3	143.28
13	11 8 10.79	8 43 34.6	134.58	13	12 32 57.21	2 28 56.0	143.30
14	11 9 57.45	8 30 7.1	134.92	14	12 34 44.33	2 43 15.8	143.32
15	11 11 44.01	8 16 37.6	135.25	15	12 36 31.58	2 57 35.7	143.32
16	11 13 30.48	8 3 6.1	135.58	16	12 38 18.97	3 11 55.6	143.33
17	11 15 16.86	7 49 32.6	135.88	17	12 40 6.49	3 26 15.6	143.33
18	11 17 3.14	7 35 57.3	136.18	18	12 41 54.17	3 40 35.6	143.30
19	11 18 49.35	7 22 20.2	136.50	19	12 43 41.99	3 54 55.4	143.30
20	11 20 35.47	7 8 41.2	136.78	20	12 45 29.97	4 9 15.2	143.27
21	11 22 21.53	6 55 0.5	137.08	21	12 47 18.11	4 23 34.8	143.22
22	11 24 7.51	6 41 18.0	137.35	22	12 49 6.41	4 37 54.1	143.18
23	11 25 53.43	6 27 33.9	137.63	23	12 50 54.89	4 52 13.2	143.13
24	11 27 39.29	N. 6 13 48.1		24	12 52 43.54	S. 5 6 32.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 21.				SATURDAY 23.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	12 52 43.54	S. 5 6 32.0	143.07	0	14 24 49.29	S. 16 9 29.6	128.72
1	12 54 32.38	5 20 50.4	143.00	1	14 26 52.98	16 22 21.9	128.12
2	12 56 21.40	5 35 8.4	142.93	2	14 28 57.11	16 35 10.6	127.52
3	12 58 10.62	5 49 26.0	142.85	3	14 31 1.68	16 47 55.7	126.88
4	13 0 0.03	6 3 43.1	142.75	4	14 33 6.68	17 0 37.0	126.27
5	13 1 49.65	6 17 59.6	142.65	5	14 35 12.13	17 13 14.6	125.60
6	13 3 39.47	6 32 15.5	142.55	6	14 37 18.03	17 25 48.2	124.93
7	13 5 29.51	6 46 30.8	142.42	7	14 39 24.39	17 38 17.8	124.27
8	13 7 19.77	7 0 45.3	142.30	8	14 41 31.20	17 50 43.4	123.57
9	13 9 10.25	7 14 59.1	142.17	9	14 43 38.47	18 3 4.8	122.95
10	13 11 0.96	7 29 12.1	142.02	10	14 45 46.21	18 15 21.9	122.12
11	13 12 51.90	7 43 24.2	141.87	11	14 47 54.42	18 27 34.6	121.38
12	13 14 43.08	7 57 35.4	141.70	12	14 50 3.10	18 39 42.9	120.63
13	13 16 34.51	8 11 45.6	141.55	13	14 52 12.26	18 51 46.7	119.85
14	13 18 26.18	8 25 54.9	141.35	14	14 54 21.90	19 3 45.8	119.05
15	13 20 18.11	8 40 3.0	141.17	15	14 56 32.03	19 15 40.1	118.25
16	13 22 10.30	8 54 10.0	140.95	16	14 58 42.64	19 27 29.6	117.43
17	13 24 2.76	9 8 15.7	140.77	17	15 0 53.75	19 39 14.2	116.58
18	13 25 55.48	9 22 20.3	140.53	18	15 3 5.35	19 50 53.7	115.72
19	13 27 48.49	9 36 23.5	140.30	19	15 5 17.45	20 2 28.0	114.85
20	13 29 41.77	9 50 25.3	140.07	20	15 7 30.05	20 13 57.1	113.97
21	13 31 35.34	10 4 25.7	139.82	21	15 9 43.15	20 25 20.9	113.03
22	13 33 29.21	10 18 24.6	139.55	22	15 11 56.75	20 36 39.1	112.13
23	13 35 23.37	S. 10 32 21.9	139.28	23	15 14 10.87	S. 20 47 51.9	111.17
FRIDAY 22.				SUNDAY 24.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	13 37 17.83	S. 10 46 17.6	139.00	0	15 16 25.49	S. 20 58 58.9	110.22
1	13 39 12.60	11 0 11.6	138.70	1	15 18 40.63	21 10 0.2	109.22
2	13 41 7.69	11 14 3.8	138.40	2	15 20 56.28	21 20 55.5	108.23
3	13 43 3.09	11 27 54.2	138.10	3	15 23 12.45	21 31 44.9	107.22
4	13 44 58.82	11 41 42.8	137.77	4	15 25 29.14	21 42 28.2	106.18
5	13 46 54.88	11 55 29.4	137.42	5	15 27 46.34	21 53 5.3	105.12
6	13 48 51.27	12 9 13.9	137.08	6	15 30 4.08	22 3 36.0	104.07
7	13 50 48.00	12 22 56.4	136.72	7	15 32 22.33	22 14 0.4	102.97
8	13 52 45.08	12 36 36.7	136.35	8	15 34 41.10	22 24 18.2	101.85
9	13 54 42.50	12 50 14.8	135.98	9	15 37 0.40	22 34 29.3	100.73
10	13 56 40.29	13 3 50.7	135.57	10	15 39 20.22	22 44 33.7	99.58
11	13 58 38.43	13 17 24.1	135.17	11	15 41 40.57	22 54 31.2	98.43
12	14 0 36.93	13 30 55.1	134.75	12	15 44 1.45	23 4 21.8	97.25
13	14 2 35.81	13 44 23.6	134.33	13	15 46 22.86	23 14 5.3	96.05
14	14 4 35.06	13 57 49.6	133.87	14	15 48 41.11	23 23 41.6	94.82
15	14 6 34.69	14 11 12.8	133.43	15	15 51 5.35	23 33 10.5	93.60
16	14 8 34.71	14 24 33.4	132.95	16	15 53 29.58	23 42 32.1	92.33
17	14 10 35.12	14 37 51.1	132.47	17	15 55 53.81	23 51 46.1	91.05
18	14 12 35.92	14 51 5.9	131.92	18	15 58 18.04	24 0 52.4	89.75
19	14 14 37.12	15 4 17.8	131.41	19	16 0 42.27	24 9 50.9	88.45
20	14 16 38.73	15 17 26.6	130.87	20	16 3 16.50	24 18 41.6	87.10
21	14 18 40.74	15 30 32.2	130.31	21	16 6 50.73	24 27 24.2	85.77
22	14 20 43.17	15 43 34.7	129.73	22	16 10 24.96	24 35 58.8	84.38
23	14 22 46.02	15 56 33.8	129.15	23	16 13 59.19	24 44 25.1	83.00
24	14 24 49.29	S. 16 9 29.6	128.57	24	16 17 33.42	24 52 43.1	81.67

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>MONDAY 25.</i>				<i>WEDNESDAY 27.</i>			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	16 12 52.87	S. 24 52 43.1	81.58	0	18 18 52.74	S. 28 14 6.1	4.72
1	16 15 20.53	25 0 52.6	80.17	1	18 21 37.08	28 13 37.8	6.78
2	16 17 48.70	25 8 53.6	78.70	2	18 24 21.52	28 12 57.1	8.83
3	16 20 17.37	25 16 45.8	77.25	3	18 27 6.03	28 12 4.1	10.90
4	16 22 46.55	25 24 29.3	75.77	4	18 29 50.61	28 10 58.7	12.97
5	16 25 16.22	25 32 3.9	74.25	5	18 32 35.25	28 9 40.9	15.02
6	16 27 46.40	25 39 29.4	72.78	6	18 35 19.93	28 8 10.8	17.10
7	16 30 17.06	25 46 45.8	71.20	7	18 38 4.64	28 6 28.2	19.17
8	16 32 48.21	25 53 53.0	69.65	8	18 40 49.36	28 4 33.2	21.22
9	16 35 19.84	26 0 50.9	68.07	9	18 43 34.09	28 2 25.9	23.30
10	16 37 51.95	26 7 39.3	66.47	10	18 46 18.81	28 0 6.1	25.35
11	16 40 24.53	26 14 18.1	64.87	11	18 49 3.51	27 57 34.0	27.42
12	16 42 57.58	26 20 47.3	63.25	12	18 51 48.17	27 54 49.5	29.48
13	16 45 31.09	26 27 6.8	61.58	13	18 54 32.78	27 51 52.6	31.55
14	16 48 5.06	26 33 16.3	59.93	14	18 57 17.33	27 48 43.3	33.58
15	16 50 39.47	26 39 15.9	58.25	15	19 0 1.81	27 45 21.8	35.65
16	16 53 14.33	26 45 5.4	56.55	16	19 2 46.21	27 41 47.9	37.70
17	16 55 49.63	26 50 44.7	54.85	17	19 5 30.50	27 38 1.7	39.72
18	16 58 25.35	26 56 13.8	53.12	18	19 8 14.69	27 34 3.4	41.77
19	17 1 1.50	27 1 32.5	51.35	19	19 10 58.76	27 29 52.8	43.80
20	17 3 38.06	27 6 40.6	49.62	20	19 13 42.69	27 25 30.0	45.80
21	17 6 15.03	27 11 38.3	47.82	21	19 16 26.49	27 20 55.2	47.83
22	17 8 52.40	27 16 25.2	46.03	22	19 19 10.12	27 16 8.2	49.83
23	17 11 30.16	S. 27 21 1.4	44.23	23	19 21 53.59	S. 27 11 9.2	51.83
<i>TUESDAY 26.</i>				<i>THURSDAY 28.</i>			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	17 14 8.30	S. 27 25 26.8	42.40	0	19 24 36.88	S. 27 5 58.2	53.82
1	17 16 46.82	27 29 41.2	40.57	1	19 27 19.98	27 0 35.3	55.82
2	17 19 25.71	27 33 44.6	38.70	2	19 30 2.87	26 55 0.4	57.77
3	17 22 4.95	27 37 36.8	36.85	3	19 32 45.55	26 49 13.8	59.73
4	17 24 44.54	27 41 17.9	34.97	4	19 35 28.01	26 43 15.4	61.68
5	17 27 24.46	27 44 47.7	33.08	5	19 38 10.24	26 37 5.3	63.62
6	17 30 4.72	27 48 6.2	31.17	6	19 40 52.23	26 30 43.6	65.55
7	17 32 45.28	27 51 13.2	29.27	7	19 43 33.97	26 24 10.3	67.47
8	17 35 26.16	27 54 8.8	27.33	8	19 46 15.44	26 17 25.5	69.37
9	17 38 7.33	27 56 52.8	25.40	9	19 48 56.64	26 10 29.3	71.25
10	17 40 48.79	27 59 25.2	23.45	10	19 51 37.57	26 3 21.8	73.13
11	17 43 30.52	28 1 45.9	21.48	11	19 54 18.20	25 56 3.0	75.00
12	17 46 12.51	28 3 54.8	19.52	12	19 56 58.54	25 48 33.0	76.85
13	17 48 54.76	28 5 51.9	17.55	13	19 59 38.57	25 40 51.9	78.68
14	17 51 37.25	28 7 37.2	15.55	14	20 2 18.28	25 32 59.8	80.50
15	17 54 19.97	28 9 10.5	13.55	15	20 4 57.67	25 24 56.8	82.32
16	17 57 2.90	28 10 31.8	11.55	16	20 7 36.73	25 16 42.9	84.08
17	17 59 46.04	28 11 41.1	9.55	17	20 10 15.46	25 8 18.4	85.88
18	18 2 29.38	28 12 38.4	7.52	18	20 12 53.84	24 59 43.1	87.62
19	18 5 12.89	28 13 23.5	5.50	19	20 15 31.86	24 50 57.4	89.38
20	18 7 56.57	28 13 56.5	3.45	20	20 18 9.53	24 42 1.1	91.08
21	18 10 40.41	28 14 17.2	1.43	21	20 20 46.84	24 32 54.6	92.82
22	18 13 24.39	28 14 25.8	0.62	22	20 23 23.77	24 23 37.7	94.50
23	18 16 8.51	28 14 22.1	2.67	23	20 26 0.33	24 14 10.7	96.17
	11 52.74	S. 28 14 6.1		24	20 28 36.51	S. 24 4 33.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 29.				SUNDAY 31.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	20 28 36.51	S. 24 4 33.7	97.83	0	22 25 18.41	S. 13 44 25.0	153.93
1	20 31 12.30	23 54 46.7	99.47	1	22 27 34.17	13 29 1.4	154.62
2	20 33 47.69	23 44 49.9	101.08	2	22 29 49.57	13 13 33.7	155.25
3	20 36 22.68	23 34 43.4	102.68	3	22 32 4.60	12 58 2.2	155.90
4	20 38 57.28	23 24 27.3	104.27	4	22 34 19.27	12 42 26.8	156.53
5	20 41 31.47	23 14 1.7	105.82	5	22 36 33.58	12 26 47.6	157.12
6	20 44 5.25	23 3 26.8	107.38	6	22 38 47.55	12 11 4.9	157.68
7	20 46 38.62	22 52 42.5	108.90	7	22 41 1.17	11 55 18.8	158.27
8	20 49 11.57	22 41 49.1	110.40	8	22 43 14.44	11 39 29.2	158.78
9	20 51 44.10	22 30 46.7	111.88	9	22 45 27.39	11 23 36.5	159.33
10	20 54 16.21	22 19 35.4	113.37	10	22 47 40.00	11 7 40.5	159.82
11	20 56 47.89	22 8 15.2	114.80	11	22 49 52.29	10 51 41.6	160.32
12	20 59 19.15	21 56 46.4	116.23	12	22 52 4.25	10 35 39.7	160.78
13	21 1 49.98	21 45 9.0	117.63	13	22 54 15.90	10 19 35.0	161.22
14	21 4 20.37	21 33 23.2	119.02	14	22 56 27.23	10 3 27.7	161.67
15	21 6 50.33	21 21 29.1	120.38	15	22 58 38.26	9 47 17.7	162.07
16	21 9 19.86	21 9 26.8	121.73	16	23 0 48.99	9 31 5.3	162.47
17	21 11 48.96	20 57 16.4	123.05	17	23 2 59.42	9 14 50.5	162.87
18	21 14 17.62	20 44 58.1	124.37	18	23 5 9.56	8 58 33.3	163.20
19	21 16 45.84	20 32 31.9	125.65	19	23 7 19.42	8 42 14.1	163.57
20	21 19 13.62	20 19 58.0	126.92	20	23 9 29.00	8 25 52.7	163.88
21	21 21 40.97	20 7 16.5	128.15	21	23 11 38.31	8 9 29.4	164.22
22	21 24 7.88	19 54 27.6	129.37	22	23 13 47.35	7 53 4.1	164.48
23	21 26 34.35	S. 19 41 31.4	130.58	23	23 15 56.12	S. 7 36 37.2	164.78
SATURDAY 30.				MONDAY, JAN. 1, 1838.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	21 29 0.39	S. 19 28 27.9	131.77	0	23 18 4.64	S. 7 20 8.5	
1	21 31 25.99	19 15 17.3	132.92				
2	21 33 51.15	19 1 59.8	134.05				
3	21 36 15.88	18 48 35.5	135.18				
4	21 38 40.18	18 35 4.4	136.27				
5	21 41 4.04	18 21 26.8	137.35				
6	21 43 27.48	18 7 42.7	138.40				
7	21 45 50.48	17 53 52.3	139.45				
8	21 48 13.06	17 39 55.6	140.45				
9	21 50 35.22	17 25 52.9	141.45				
10	21 52 56.95	17 11 44.2	142.43				
11	21 55 18.26	16 57 29.6	143.37				
12	21 57 39.15	16 43 9.4	144.30				
13	21 59 59.64	16 28 43.6	145.22				
14	22 2 19.70	16 14 12.3	146.10				
15	22 4 39.36	15 59 35.7	146.98				
16	22 6 58.61	15 44 53.8	147.82				
17	22 9 17.45	15 30 6.9	148.67				
18	22 11 35.90	15 15 14.9	149.47				
19	22 13 53.95	15 0 18.1	150.27				
20	22 16 11.61	14 45 16.5	151.03				
21	22 18 28.88	14 30 10.3	151.80				
22	22 20 45.77	14 14 59.5	152.52				
23	22 23 2.28	13 59 44.4	153.23				
24	22 25 18.41	S. 13 44 25.0					

PHASES OF THE MOON.

	^d ^h ^m
☾ First Quarter	- - 4 9 52.5
☾ Full Moon	- - 11 14 17.9
☾ Last Quarter	- - 19 16 12.6
● New Moon	- - 27 2 33.3

	^d ^h
☾ Perigee	- - - - - 1 22
☾ Apogee	- - - - - 17 15
☾ Perigee	- - - - - 29 8

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	
1	SUN W.	45 3 25	2594	46 42 28	2592	48 21 34	2590	50 0 42	
	Fomalhaut E.	39 47 35	2796	38 13 2	2840	36 39 26	2891	35 6 55	
	α Pegasi E.	61 24 9	2696	59 47 24	2712	58 11 0	2729	56 34 58	
2	SUN W.	58 16 34	2590	59 55 43	2591	61 34 51	2592	63 13 57	
	Venus W.	12 17 44	2694	13 54 32	2678	15 31 41	2667	17 9 5	
	α Pegasi E.	48 42 28	2889	47 9 55	2923	45 38 12	2971	44 7 23	
	α Arietis E.	87 58 55	2307	86 13 6	2308	84 27 18	2309	82 41 32	
3	SUN W.	71 28 49	2604	73 7 38	2607	74 46 23	2611	76 25 3	
	Venus W.	25 17 42	2649	26 55 31	2649	28 33 20	2650	30 11 7	
	α Arietis E.	73 53 39	2326	72 8 18	2330	70 23 3	2335	68 37 54	
	Aldebaran E.	104 22 15	2331	102 37 1	2333	100 51 50	2335	99 6 42	
4	SUN W.	84 37 13	2633	86 15 23	2637	87 53 28	2641	89 31 27	
	Venus W.	38 19 20	2665	39 56 47	2663	41 34 10	2672	43 11 28	
	α Arietis E.	59 53 56	2366	58 9 33	2373	56 25 19	2380	54 41 16	
	Aldebaran E.	90 22 5	2354	88 37 24	2358	86 52 49	2363	85 8 21	
5	SUN W.	97 39 47	2669	99 17 8	2675	100 54 21	2680	102 31 28	
	α Aquilæ W.	58 34 57	3560	59 54 15	3520	61 14 17	3486	62 34 57	
	Venus W.	51 16 39	2696	52 53 24	2701	54 30 3	2705	56 6 36	
	Fomalhaut W.	26 23 59	3522	27 44 0	3394	29 6 24	3288	30 30 50	
	α Arietis E.	46 3 49	2432	44 21 0	2443	42 38 26	2455	40 56 9	
	Aldebaran E.	76 27 37	2391	74 43 50	2397	73 0 11	2403	71 16 40	
6	SUN W.	110 35 11	2714	112 11 33	2720	113 47 47	2726	115 23 52	
	α Aquilæ W.	69 25 59	3341	70 49 23	3326	72 13 4	3313	73 37 0	
	Venus W.	64 7 44	2735	65 43 37	2741	67 19 23	2746	68 55 2	
	Fomalhaut W.	37 54 51	2920	39 26 45	2886	40 59 22	2857	42 32 36	
	α Arietis E.	32 30 0	2557	30 50 6	2583	29 10 47	2612	27 32 8	
	Aldebaran E.	62 41 22	2443	60 58 49	2450	59 16 26	2458	57 34 14	
7	α Aquilæ W.	80 39 20	3271	82 4 5	3270	83 28 52	3271	84 53 38	
	Venus W.	76 51 23	2781	78 26 16	2787	80 1 1	2794	81 35 37	
	Fomalhaut W.	50 25 33	2751	52 1 5	2741	53 36 50	2734	55 12 45	
	α Pegasi W.	33 16 21	3700	34 33 8	3599	35 51 44	3510	37 11 57	
	Aldebaran E.	49 6 22	2515	47 25 30	2528	45 44 56	2540	44 4 38	
	Pollux E.	92 22 17	2416	90 39 5	2422	88 56 1	2428	87 13 6	
8	Venus W.	89 26 31	2834	91 0 15	2841	92 33 49	2848	94 7 14	
	Fomalhaut W.	63 13 56	2713	64 50 19	2713	66 26 42	2714	68 3 4	
	α Pegasi W.	44 11 30	3174	45 38 10	3142	47 5 29	3112	48 33 24	
	Aldebaran E.	35 48 14	2638	34 10 11	2662	32 32 40	2687	30 55 43	
	Pollux E.	78 40 43	2466	76 58 42	2473	75 16 51	2480	73 35 9	
9	Venus W.	101 51 53	2895	103 24 18	2904	104 56 32	2913	106 28 35	
	Fomalhaut W.	76 4 6	2732	77 40 3	2737	79 15 54	2743	80 51 37	
	α Pegasi W.	55 59 32	3003	57 29 41	2993	59 0 3	2985	60 30 35	
	α Arietis W.	- - -	-	- - -	-	15 34 20	3281	16 58 54	
	Pollux E.	65 9 12	2324	63 28 32	2532	61 48 3	2540	60 7 45	
	Regulus E.	101 47 52	2530	100 7 20	2539	98 27 1	2546	96 46 52	
	Jupiter E.	121 57 49	2550	120 17 45	2556	118 37 50	2564	116 58 6	
10	Venus W.	114 6 3	2967	115 36 57	2976	117 7 40	2986	118 38 10	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of diff.	XV ^h .	P. L. of diff.	XVIII ^h .	P. L. of diff.	XXI ^h .	P. L. of diff.
1	SUN W.	51 39 52	2589	53 19 2	2588	54 58 13	2588	56 37 24	2589
	Fomalhaut E.	33 35 39	3018	32 5 49	3099	30 37 38	3194	29 11 21	3307
	α Pegasi E.	54 59 23	2771	53 24 17	2796	51 49 44	2823	50 15 46	2854
2	SUN W.	64 53 1	2595	66 32 3	2597	68 11 2	2600	69 49 57	2602
	Venus W.	18 46 39	2653	20 24 20	2651	22 2 6	2649	23 39 54	2649
	α Pegasi E.	42 37 36	3076	41 8 57	3138	39 41 34	3209	38 15 35	3289
	α Arietis E.	80 55 50	2314	79 10 11	2317	77 24 36	2320	75 39 5	2323
3	SUN W.	78 3 39	2618	79 42 10	2621	81 20 36	2625	82 58 57	2629
	Venus W.	31 48 52	2653	33 26 35	2656	35 4 14	2659	36 41 49	2662
	α Arietis E.	66 52 52	2344	65 7 56	2349	63 23 8	2355	61 38 28	2360
	Aldebaran E.	97 21 38	2341	95 36 38	2344	93 51 42	2347	92 6 51	2351
4	SUN W.	91 9 19	2650	92 47 6	2655	94 24 46	2660	96 2 20	2665
	Venus W.	44 48 41	2679	46 25 49	2683	48 2 51	2687	49 39 48	2692
	α Arietis E.	52 57 23	2394	51 13 40	2403	49 30 10	2412	47 46 53	2421
	Aldebaran E.	83 23 59	2371	81 39 43	2376	79 55 34	2381	78 11 32	2386
5	SUN W.	104 8 27	2690	105 45 20	2697	107 22 4	2702	108 58 42	2708
	α Aquilæ W.	63 56 12	3426	65 17 59	3401	66 40 14	3379	68 2 55	3359
	Venus W.	57 43 3	2715	59 19 23	2720	60 55 37	2725	62 31 44	2730
	Fomalhaut W.	31 57 1	3124	33 24 42	3060	34 53 41	3006	36 23 47	2959
	α Arietis E.	39 14 11	2482	37 32 33	2498	35 51 17	2515	34 10 25	2535
	Aldebaran E.	69 33 18	2415	67 50 5	2421	66 7 1	2428	64 24 6	2436
6	SUN W.	116 59 50	2738	118 35 39	2745	120 11 19	2751	121 46 51	2758
	α Aquilæ W.	75 1 10	3292	76 25 31	3284	77 50 1	3278	79 14 38	3274
	Venus W.	70 30 33	2757	72 5 57	2763	73 41 13	2769	75 16 22	2775
	Fomalhaut W.	44 6 23	2811	45 40 37	2792	47 15 16	2776	48 50 15	2762
	α Arietis E.	25 54 15	2685	24 17 15	2732	22 41 18	2789	21 6 36	2862
	Aldebaran E.	55 52 14	2475	54 10 26	2484	52 28 51	2494	50 47 30	2504
7	α Aquilæ W.	86 18 23	3274	87 43 5	3278	89 7 42	3284	90 32 12	3291
	Venus W.	83 10 5	2806	84 44 25	2813	86 18 36	2820	87 52 38	2827
	Fomalhaut W.	56 48 49	2722	58 24 59	2718	60 1 15	2716	61 37 34	2714
	α Pegasi W.	38 33 37	3365	39 56 33	3308	41 20 35	3258	42 45 36	3213
	Aldebaran E.	42 24 38	2567	40 44 58	2583	39 5 40	2600	37 26 45	2618
	Pollux E.	85 30 20	2440	83 47 42	2446	82 5 13	2453	80 22 53	2460
8	Venus W.	95 40 30	2863	97 13 36	2871	98 46 32	2879	100 19 18	2887
	Fomalhaut W.	69 39 24	2717	71 15 41	2720	72 51 54	2723	74 28 3	2728
	α Pegasi W.	50 1 50	3065	51 30 43	3045	53 0 0	3029	54 29 37	3014
	Aldebaran E.	29 19 23	2747	27 43 46	2785	26 8 59	2829	24 35 9	2879
	Pollux E.	71 53 37	2494	70 12 15	2501	68 31 3	2509	66 50 2	2517
9	Venus W.	108 0 27	2929	109 32 9	2938	111 3 39	2948	112 34 57	2958
	Fomalhaut W.	82 27 12	2756	84 2 38	2763	85 37 54	2771	87 13 0	2780
	α Pegasi W.	62 1 15	2973	63 32 2	2970	65 2 53	2967	66 33 47	2966
	α Arietis W.	18 25 53	3068	19 54 42	3000	21 24 55	2948	22 56 13	2909
	Pollux E.	58 27 38	2556	56 47 43	2564	55 7 59	2573	53 28 27	2582
	Regulus E.	95 6 54	2562	93 27 7	2572	91 47 33	2580	90 8 10	2588
	Jupiter E.	115 18 33	2580	113 39 11	2588	112 0 0	2597	110 21 1	2605
10	Venus W.	120 8 27	3006	121 38 32	3017	123 8 24	3027	124 38 3	3037

MEAN TIME.											
LUNAR DISTANCES.											
Day of the Month.	Star's Name and Position.		Noon.	P. L. of diff.	III ^h .	P. L. of diff.	VI ^h .	P. L. of diff.	IX ^h .	P. L. of diff.	
10	α Pegasi	W.	68 4 43	2966	69 35 38	2966	71 6 33	2968	72 37 26	2968	
	α Arietis	W.	24 28 21	2878	26 1 8	2854	27 34 26	2836	29 8 7	2881	
	Pollux	E.	51 49 7	2591	50 10 0	2600	48 31 5	2609	46 52 22	2606	
	Regulus	E.	88 28 58	2597	86 49 59	2605	85 11 11	2615	83 32 36	2615	
	Jupiter	E.	108 42 13	2615	107 3 38	2623	105 25 14	2632	103 47 2	2640	
11	α Pegasi	W.	80 10 40	2996	81 40 58	3002	83 11 8	3009	84 41 9	3010	
	α Arietis	W.	36 59 32	2798	38 34 3	2798	40 8 33	2800	41 43 1	2801	
	Pollux	E.	38 42 3	2667	37 4 39	2678	35 27 29	2688	33 50 33	2688	
	Regulus	E.	75 22 52	2673	73 45 36	2682	72 8 32	2692	70 31 41	2692	
	Jupiter	E.	95 39 11	2688	94 2 15	2698	92 25 32	2708	90 49 2	2718	
12	α Arietis	W.	49 34 4	2828	51 7 56	2835	52 41 39	2842	54 15 12	2848	
	Aldebaran	W.	20 14 4	3224	21 39 45	3172	23 6 28	3131	24 34 0	3131	
	Pollux	E.	25 49 25	2753	24 13 56	2766	22 38 43	2778	21 3 46	2788	
	Regulus	E.	62 30 54	2755	60 55 27	2766	59 20 14	2776	57 45 15	2786	
	Jupiter	E.	82 49 54	2769	81 14 45	2779	79 39 50	2789	78 5 8	2799	
13	α Arietis	W.	62 0 29	2890	63 33 1	2899	65 5 21	2908	66 37 30	2918	
	Aldebaran	W.	31 58 44	3025	33 28 26	3019	34 58 15	3016	36 28 8	3026	
	Regulus	E.	49 53 55	2842	48 20 22	2854	46 47 4	2865	45 14 0	2875	
	Jupiter	E.	70 15 2	2852	68 41 41	2862	67 8 34	2873	65 35 40	2883	
14	α Arietis	W.	74 15 26	2962	75 46 27	2970	77 17 18	2979	78 47 57	2989	
	Aldebaran	W.	43 57 30	3023	45 27 14	3026	46 56 54	3030	48 26 29	3036	
	Regulus	E.	37 32 13	2932	36 0 35	2943	34 29 11	2955	32 58 2	2965	
	Jupiter	E.	57 54 23	2932	56 22 45	2942	54 51 20	2952	53 20 7	2962	
	Spica π	E.	91 28 55	2910	89 56 49	2920	88 24 56	2930	86 53 15	2940	
	Saturn	E.	122 52 57	2968	121 22 4	2977	119 51 23	2986	118 20 53	2996	
15	α Arietis	W.	86 18 32	3029	87 48 9	3036	89 17 37	3045	90 46 54	3056	
	Aldebaran	W.	55 52 52	3061	57 21 49	3066	58 50 40	3071	60 19 25	3076	
	Pollux	W.	11 35 46	3018	13 5 36	3018	14 35 26	3021	16 5 13	3026	
	Regulus	E.	25 25 57	3028	23 56 19	3043	22 26 59	3058	20 57 58	3073	
	Jupiter	E.	45 46 48	3005	44 16 41	3012	42 46 43	3020	41 16 55	3028	
	Spica π	E.	79 17 42	2982	77 47 7	2990	76 16 42	2998	74 46 27	3006	
	Saturn	E.	110 51 3	3036	109 21 35	3044	107 52 17	3052	106 23 8	3060	
16	Aldebaran	W.	67 41 35	3101	69 9 44	3105	70 37 47	3109	72 5 46	3113	
	Pollux	W.	23 32 56	3046	25 2 12	3051	26 31 22	3055	28 0 27	3060	
	Jupiter	E.	33 50 7	3061	32 21 10	3067	30 52 20	3072	29 23 36	3078	
	Spica π	E.	67 17 24	3039	65 47 59	3044	64 18 41	3050	62 49 30	3056	
	Saturn	E.	98 59 31	3091	97 31 10	3096	96 2 56	3101	94 34 48	3106	
	Sun	E.	129 41 31	3447	128 20 7	3451	126 58 48	3456	125 37 35	3461	
17	Aldebaran	W.	79 24 36	3128	80 52 12	3129	82 19 46	3131	83 47 18	3133	
	Pollux	W.	35 24 45	3074	36 53 26	3076	38 22 5	3078	39 50 41	3080	
	Jupiter	E.	22 1 28	3099	20 33 17	3104	19 5 12	3108	17 37 12	3111	
	Spica π	E.	55 24 52	3073	53 56 10	3075	52 27 30	3078	50 58 53	3080	
	Saturn	E.	87 15 28	3124	85 47 48	3127	84 20 11	3129	82 52 37	3133	
	Sun	E.	118 52 39	3479	117 31 51	3480	116 11 5	3483	114 50 22	3488	
18	Aldebaran				92 32 15	3131	93 59 47	3129	95 27 21	3127	
	Pollux				8 42 5	3078	50 10 42	3076	51 39 21	3074	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		^o ⁱ ^u		^o ⁱ ^u		^o ⁱ ^u		^o ⁱ ^u	
10	α Pegasi W.	74 8 15	2974	75 39 0	2978	77 9 40	2983	78 40 14	2989
	α Arietis W.	30 42 5	2813	32 16 16	2805	33 50 37	2801	35 25 3	2799
	Pollux E.	45 13 52	2628	43 35 35	2638	41 57 31	2647	40 19 40	2657
	Regulus E.	81 54 12	2633	80 16 2	2643	78 38 5	2653	77 0 22	2663
	Jupiter E.	102 9 3	2650	100 31 16	2660	98 53 42	2669	97 16 20	2678
11	α Pegasi W.	86 10 59	3028	87 40 37	3036	89 10 5	3046	90 39 20	3056
	α Arietis W.	43 17 25	2807	44 51 44	2811	46 25 58	2816	48 0 5	2822
	Pollux E.	32 13 50	2709	30 37 22	2720	29 1 8	2731	27 25 9	2742
	Regulus E.	68 55 3	2713	67 18 40	2723	65 42 30	2734	64 6 35	2744
	Jupiter E.	89 12 46	2728	87 36 43	2738	86 0 53	2748	84 25 17	2758
12	α Arietis W.	55 48 36	2857	57 21 50	2865	58 54 54	2873	60 27 47	2882
	Aldebaran W.	26 2 10	3076	27 30 49	3057	28 59 51	3048	30 29 11	3032
	Pollux E.	19 29 4	2802	17 54 39	2817	16 20 33	2831	14 46 45	2846
	Regulus E.	56 10 30	2798	54 36 0	2809	53 1 44	2821	51 27 43	2831
	Jupiter E.	76 30 40	2810	74 56 25	2821	73 22 24	2831	71 48 36	2841
13	α Arietis W.	68 9 28	2926	69 41 14	2935	71 12 49	2948	72 44 13	2952
	Aldebaran W.	37 58 2	3014	39 27 57	3015	40 57 51	3018	42 27 42	3020
	Regulus E.	43 41 10	2887	42 8 35	2898	40 36 13	2909	39 4 6	2920
	Jupiter E.	64 2 59	2893	62 30 31	2903	60 58 16	2913	59 26 13	2922
14	α Arietis W.	80 18 25	2996	81 48 43	3005	83 18 50	3014	84 48 46	3022
	Aldebaran W.	49 55 58	3040	51 25 21	3045	52 54 38	3050	54 23 49	3056
	Regulus E.	31 27 6	2978	29 56 26	2990	28 26 1	3002	26 55 51	3015
	Jupiter E.	51 49 5	2970	50 18 14	2979	48 47 35	2987	47 17 6	2996
	Spica π E.	85 21 46	2948	83 50 28	2958	82 19 22	2966	80 48 27	2974
	Saturn E.	116 50 33	3004	115 20 25	3012	113 50 27	3021	112 20 40	3029
15	α Arietis W.	92 16 2	3059	93 45 2	3065	95 13 54	3072	96 42 38	3078
	Aldebaran W.	61 48 3	3082	63 16 35	3087	64 45 1	3092	66 13 21	3096
	Pollux W.	17 34 56	3028	19 4 34	3032	20 34 7	3037	22 3 34	3041
	Regulus E.	19 29 17	3092	18 0 57	3113	16 33 3	3139	15 5 41	3173
	Jupiter E.	39 47 16	3035	38 17 46	3042	36 48 25	3048	35 19 12	3055
	Spica π E.	73 16 22	3013	71 46 25	3019	70 16 36	3026	68 46 56	3033
	Saturn E.	104 54 8	3066	103 25 17	3073	101 56 34	3079	100 27 59	3085
16	Aldebaran W.	73 33 40	3117	75 1 29	3119	76 29 15	3123	77 56 57	3125
	Pollux W.	29 29 27	3062	30 58 23	3066	32 27 14	3069	33 56 1	3072
	Jupiter E.	27 54 59	3083	26 26 28	3087	24 58 3	3092	23 29 43	3096
	Spica π E.	61 20 24	3058	59 51 23	3063	58 22 28	3067	56 53 38	3070
	Saturn E.	93 6 46	3110	91 38 49	3115	90 10 58	3119	88 43 11	3122
	Sun E.	124 16 27	3465	122 55 24	3469	121 34 25	3472	120 13 30	3476
17	Aldebaran W.	85 14 49	3133	86 42 19	3134	88 9 48	3134	89 37 16	3134
	Pollux W.	41 19 16	3080	42 47 50	3081	44 16 23	3081	45 44 56	3080
	Jupiter E.	16 9 16	3115	14 41 25	3120	13 13 40	3126	11 46 2	3134
	Spica π E.	49 30 18	3081	48 1 45	3081	46 33 12	3082	45 4 40	3082
	Saturn E.	81 25 5	3132	79 57 34	3133	78 30 4	3134	77 2 35	3133
	Sun E.	113 29 40	3485	112 8 59	3486	110 48 19	3485	109 27 38	3485
18	Aldebaran W.	96 54 56	3126	98 22 34	3124	99 50 15	3120	101 18 0	3116
	Pollux W.	53 8 2	3071	54 36 47	3068	56 5 36	3064	57 34 30	3060

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
18	Regulus W.	- - -	- - -	- - -	- - -	13 55 23	3208	15 21 23	3191
	Spica π E.	43 36 8	3082	42 7 36	3080	40 39 2	3079	39 10 27	3077
	Saturn E.	75 35 5	3133	74 7 35	3132	72 40 4	3130	71 12 31	3128
	SUN E.	108 6 57	3484	106 46 15	3482	105 25 31	3480	104 4 45	3478
19	Pollux W.	59 3 29	3056	60 32 33	3050	62 1 44	3044	63 31 2	3038
	Regulus W.	22 37 22	3107	24 5 23	3096	25 33 38	3085	27 2 6	3071
	Spica π E.	31 46 46	3061	30 17 49	3057	28 48 47	3052	27 19 39	3044
	Saturn E.	63 53 58	3112	62 26 3	3107	60 58 2	3102	59 29 55	3098
	SUN E.	97 20 2	3458	95 58 51	3453	94 37 34	3447	93 16 10	3441
20	Pollux W.	70 59 36	3001	72 29 48	2991	74 0 12	2982	75 30 47	2972
	Regulus W.	34 27 32	3024	35 57 15	3012	37 27 13	3002	38 57 23	2990
	Jupiter W.	13 33 27	3037	15 2 54	3025	16 32 36	3012	18 2 34	2999
	Spica π E.	19 52 25	3020	18 22 37	3015	16 52 43	3010	15 22 43	3000
	Saturn E.	52 7 29	3063	50 38 34	3055	49 9 29	3047	47 40 14	3039
	SUN E.	86 27 5	3399	85 4 47	3389	83 42 18	3379	82 19 37	3369
21	Pollux W.	83 7 1	2916	84 38 59	2903	86 11 14	2891	87 43 45	2879
	Regulus W.	46 31 53	2930	48 3 34	2916	49 35 32	2902	51 7 49	2889
	Jupiter W.	25 36 19	2936	27 7 52	2923	28 39 42	2909	30 11 50	2895
	Saturn E.	40 11 14	2991	38 40 50	2981	37 10 14	2972	35 39 26	2962
	SUN E.	75 23 2	3308	73 59 0	3296	72 34 43	3282	71 10 10	3268
22	Regulus W.	58 53 35	2816	60 27 42	2800	62 2 10	2784	63 36 59	2769
	Jupiter W.	37 57 1	2821	39 31 1	2805	41 5 22	2790	42 40 3	2773
	Saturn E.	28 2 25	2917	26 30 28	2911	24 58 23	2907	23 26 13	2904
	SUN E.	64 3 9	3192	62 36 50	3177	61 10 13	3159	59 43 15	3143
23	Regulus W.	71 36 22	2685	73 13 22	2669	74 50 44	2651	76 28 30	2635
	Jupiter W.	50 38 54	2690	52 15 47	2672	53 53 4	2656	55 30 43	2638
	Spica π W.	17 34 46	2700	19 11 26	2680	20 48 33	2659	22 26 8	2640
	SUN E.	52 23 26	3059	50 54 26	3042	49 25 5	3024	47 55 22	3007
24	Regulus W.	84 43 10	2547	86 23 18	2530	88 3 50	2512	89 44 46	2496
	Jupiter W.	63 44 56	2551	65 24 59	2533	67 5 26	2516	68 46 17	2499
	Spica π W.	30 40 25	2547	32 20 33	2530	34 1 5	2512	35 42 2	2494
	SUN E.	40 21 31	2924	38 49 42	2907	37 17 32	2892	35 45 3	2877
25	Jupiter W.	77 16 32	2414	78 59 46	2398	80 43 23	2382	82 27 23	2366
	Spica π W.	44 12 54	2409	45 56 16	2392	47 40 2	2377	49 24 10	2361
29	SUN W.	26 21 56	2500	28 3 10	2492	29 44 35	2486	31 26 8	2482
	Venus E.	21 28 21	2456	19 46 6	2465	18 4 4	2476	16 22 17	2492
	α Pegasi E.	52 45 1	2651	51 7 15	2680	49 30 8	2712	47 53 44	2749
	α Arietis E.	92 36 13	2159	90 46 44	2159	88 57 14	2160	87 7 46	2161
30	SUN W.	39 54 51	2477	41 36 36	2479	43 18 18	2482	44 59 56	2487
	α Pegasi E.	40 6 17	3025	38 36 35	3105	37 8 32	3197	35 42 19	3302
	α Arietis E.	78 1 13	2177	76 12 10	2182	74 23 15	2188	72 34 29	2194
	Aldebaran E.	108 33 17	2190	106 44 34	2192	104 55 54	2196	103 7 20	2200
31	SUN W.	53 26 29	2514	55 6	2529	57 6	2529	58 28 39	2536
	α Arietis E.	63 33 14	2233	61	2253	58 11	2253	58 11 4	2264
	Aldebaran E.	94 6 26	2230					88 43 49	2253

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
18	Regulus W.	16 47 53	3162	18 14 48	3145	19 42 3	3131	21 9 35	3119
	Spica π E.	37 41 49	3075	36 13 9	3072	34 44 25	3069	33 15 38	3065
	Saturn E.	69 44 55	3125	68 17 16	3123	66 49 34	3119	65 21 48	3116
	SUN E.	102 43 56	3475	101 23 4	3472	100 2 8	3469	98 41 8	3463
19	Pollux W.	65 0 27	3031	66 30 1	3023	67 59 43	3018	69 29 34	3009
	Regulus W.	28 30 47	3064	29 59 40	3055	31 28 45	3045	32 58 2	3035
	Spica π E.	25 50 26	3043	24 21 6	3037	22 51 39	3031	21 22 5	3025
	Saturn E.	58 1 41	3091	56 33 20	3084	55 4 51	3078	53 36 14	3071
	SUN E.	91 54 38	3432	90 32 58	3425	89 11 10	3416	87 49 12	3408
20	Pollux W.	77 1 35	2962	78 32 35	2950	80 3 50	2940	81 35 18	2928
	Regulus W.	40 27 48	2979	41 58 27	2968	43 29 20	2956	45 0 28	2943
	Jupiter W.	19 32 48	2987	21 3 17	2974	22 34 2	2962	24 5 2	2949
	Spica π E.	13 52 40	3006	12 22 34	3008	10 52 31	3014	9 22 36	3034
	Saturn E.	46 10 49	3029	44 41 12	3020	43 11 24	3011	41 41 25	3001
	SUN E.	80 56 45	3357	79 33 39	3346	78 10 21	3334	76 46 49	3321
21	Pollux W.	89 16 32	2865	90 49 36	2850	92 22 59	2835	93 56 42	2819
	Regulus W.	52 40 22	2876	54 13 12	2862	55 46 20	2846	57 19 48	2831
	Jupiter W.	31 44 15	2881	33 16 58	2866	34 50 0	2852	36 23 21	2837
	Saturn E.	34 8 25	2952	32 37 12	2943	31 5 48	2934	29 34 12	2925
	SUN E.	69 45 21	3253	68 20 14	3239	66 54 51	3223	65 29 9	3208
22	Regulus W.	65 12 8	2753	66 47 38	2735	68 23 31	2719	69 59 45	2702
	Jupiter W.	44 15 6	2757	45 50 30	2741	47 26 16	2724	49 2 24	2707
	Saturn E.	21 53 59	2903	20 21 45	2907	18 49 35	2918	17 17 39	2934
	SUN E.	58 15 58	3127	56 48 21	3110	55 20 23	3093	53 52 5	3076
23	Regulus W.	78 6 38	2617	79 45 10	2599	81 24 7	2582	83 3 26	2564
	Jupiter W.	57 8 46	2621	58 47 13	2604	60 26 3	2586	62 5 17	2568
	Spica π W.	24 4 8	2621	25 42 34	2602	27 21 26	2584	29 0 43	2566
	SUN E.	46 25 18	2990	44 54 53	2973	43 24 7	2956	41 52 59	2940
24	Regulus W.	91 26 5	2479	93 7 48	2462	94 49 55	2445	96 32 25	2428
	Jupiter W.	70 27 32	2482	72 9 11	2465	73 51 14	2448	75 33 41	2431
	Spica π W.	37 23 24	2477	39 5 10	2459	40 47 21	2442	42 29 56	2426
	SUN E.	34 12 14	2863	32 39 7	2849	31 5 43	2837	29 32 3	2825
25	Jupiter W.	84 11 46	2351	85 56 31	2337	87 41 37	2322	89 27 5	2308
	Spica π W.	51 8 41	2345	52 53 35	2330	54 38 50	2317	56 24 26	2303
29	SUN W.	33 7 47	2478	34 49 31	2477	36 31 17	2475	38 13 5	2477
	Venus E.	14 40 53	2515	13 0 1	2549	11 19 56	2599	- - -	- - -
	α Pegasi E.	46 18 9	2792	44 43 30	2839	43 9 53	2894	41 37 26	2955
	α Arietis E.	85 18 20	2163	83 28 57	2165	81 39 37	2168	79 50 22	2172
30	SUN W.	46 41 28	2490	48 22 55	2496	50 4 14	2502	51 45 25	2507
	α Pegasi E.	34 18 10	3423	32 56 19	3564	- - -	- - -	- - -	- - -
	α Arietis E.	70 45 52	2200	68 57 25	2208	67 9 9	2216	65 21 5	2225
	Aldebaran E.	101 18 53	2205	99 30 33	2211	97 42 22	2217	95 54 19	2223
31	SUN W.	60 9 2	2545	61 49 12	2553	63 29 11	2563	65 8 57	2573
	α Arietis E.	56 24 11	2275	54 37 35	2287	52 51 17	2300	51 5 17	2313
	Aldebaran E.	86 56 40	2263	85 9 46	2271	83 23 4	2281	81 36 36	2290





CONFIGURATIONS OF THE SATELLITES OF JUPITER.

At 15^h, MEAN TIME.

Day of the Month.	<i>West.</i>				<i>East.</i>			
1		3	2 4	○	1			
2		4	3 1	○	2			
3		4		○	1 3 2			
4		4	2	○	3			1
5		4	2 1	○	3			
6		4		○	3 1 2			
7		4	3 1	○	2			
8		3	2 4	○	1			
9			3 1	○	2 4			
10				○	3 1 2 4			
11			2 1	○	3 4			
12	1 ○		2	○	3			4
13				○	1 3 2			4
14			3 1	○	2			4
15		3	2	○	1 4			
16	2		3 1	○	4			
17	4			○	1 2			3
18			4 2 1	○	3			
19		4	2	○	1 3			
20		4		○	3 2			1
21		4	3 1	○	2			
22		4	3 2	○	1			
23		4	3 1	○				2
24			4	○	3 1 2			
25	4		1 2	○	3			
26			2	○	1 4 3			
27	1			○	2 3 4			
28			3 1	○	2			4
29		3	2	○	1			4
30		3	1 2	○				4
31			3	○	1 2			4

This Table represents, at 15^h after *Mean Noon* of each day of the month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and the letters *W* and *E* are such as to indicate the directions of the Satellites' motions, which are in all cases towards the centre of the disc of Jupiter, and the disc, or in the shadow, of Jupiter.

ECLIPSES OF THE SATELLITES OF JUPITER.

SATELLITE.	Day of the Month.	Mean Time.	Sidereal Time.	PHASE as seen in an inverting Telescope.	
I.		^h ^m ^s	^h ^m ^s		
	1	0 30 8.5	17 10 45.7	Im.	
	2	18 58 26.4	11 46 2.2	Im.	
	4*	13 26 47.2	6 21 21.7	Im.	
	6	7 55 5.0	0 56 38.0	Im.	
	8	2 23 26.5	19 31 58.1	Im.	
	9	20 51 43.4	14 7 13.7	Im.	
	11*	15 20 4.5	8 42 33.5	Im.	
	13	9 48 21.0	3 17 48.6	Im.	
	15	4 16 41.9	21 53 8.1	Im.	i *
	16	22 44 59.0	16 28 23.9	Im.	
	18*	17 13 19.7	11 3 43.2	Im.	
	20	11 41 36.0	5 38 58.1	Im.	
	22	6 9 56.7	0 14 17.4	Im.	
	24	0 38 12.9	18 49 32.3	Im.	
	25*	19 6 33.3	13 24 51.3	Im.	
	27*	13 34 49.5	8 0 6.1	Im.	
	29	8 3 10.0	2 35 25.3	Im.	
	31	2 31 26.4	21 10 40.3	Im.	
II.	2	5 53 30.8	22 38 57.7	Im.	
	5	19 10 18.5	12 9 45.9	Im.	
	9	8 27 22.4	1 40 50.4	Im.	
	12	21 44 12.4	15 11 41.1	Im.	i *
	16	11 1 24.2	4 42 53.5	Im.	
	20	0 18 16.7	18 13 46.5	Im.	
	23*	13 35 34.6	7 45 5.1	Im.	
	27	2 52 29.9	21 16 1.0	Im.	
	30*	16 9 56.1	10 47 27.9	Im.	
III.	2	23 30 7.0	16 18 27.5	Im.	
	3	2 54 44.7	19 43 38.7	Em.	
	10	3 27 36.2	20 44 11.5	Im.	
	10	6 51 46.4	0 8 55.3	Em.	i *
	17	7 24 54.4	1 9 44.7	Im.	e *
	17	10 48 34.3	4 33 58.0	Em.	
	24	11 22 11.4	5 35 16.5	Im.	
	24*	14 45 20.2	8 58 58.7	Em.	
	31*	15 19 31.2	10 0 51.3	Im.	
	31*	18 42 12.5	13 24 5.9	Em.	
IV.	8*	18 17 9.9	11 28 18.3	Im. i	e
	8	22 37 13.9	15 49 5.0	Em *	*
	25*	12 15 14.3	6 32 24.8	Im.	
	25*	16 31 21.2	10 49 13.7	Em.	

APPROXIMATE SIDEREAL TIMES
OF THE
OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER,
AND OF THE
TRANSITS OF THE SATELLITES AND THEIR SHADOWS
OVER THE DISC OF THE PLANET.

Satellite.	OCCULTATIONS.		TRANSITS OF SATELLITES.		TRANSITS OF SHADOWS.	
	Immersion.	Emersion.	Ingress.	Egress.	Ingress.	Egress.
	d h m	d h m	d h m	d h m	d h m	d h m
I.		1 20 42	1 15 34	2 17 53	1 14 20	1 16 40
		2 15 17	3* 10 10	3 12 29	3* 8 55	3* 11 13
		4* 9 53	5 4 45	5* 7 4	5 3 30	5* 5 50
		6 4 28	7 23 21	7 1 39	7 22 6	7 0 26
		8 23 3	9 17 56	9 20 15	8 16 41	9 19 1
	In	10 17 39	10 12 31	10 14 50	10* 11 16	10 13 36
		11* 12 14	12* 7 6	12* 9 25	12* 5 51	12* 8 11
	the	13* 6 49	14 1 42	14 4 0	14 0 27	14 2 46
		15 1 24	16 20 17	16 22 35	16 19 2	16 21 22
	Shadow.	17 19 59	17 14 52	17 17 10	17 13 37	17 15 57
		18 14 34	19* 9 27	19* 11 45	19* 8 13	19* 10 32
		20* 9 9	21 4 1	21* 6 20	21 2 48	21 5 7
		22 3 44	23 22 36	23 0 55	23 21 23	23 23 43
		24 22 18	24 17 11	25 19 29	24 15 58	25 18 18
		25 16 53	26* 11 46	26 14 4	26* 10 34	26* 12 53
		27* 11 27	28* 6 20	28* 8 38	28 5 9	28* 7 28
		29* 6 2	30 0 54	30 3 13	30 23 44	30 2 4
		31 0 36			31 18 20	32 20 39
II.		2 3 54	4 20 21	4 23 9	4 17 51	4 20 43
		6 17 26	7* 9 53	7 12 41	7* 7 22	7* 10 14
	In	9* 6 57	11 23 25	11 2 12	11 20 53	11 23 45
		13 20 28	14 12 55	14 15 42	14* 10 25	14 13 16
	the	16* 9 58	18 2 26	18 5 13	18 23 56	18 2 47
		20 23 27	21 15 55	22 18 42	21 13 27	21 16 18
	Shadow.	23* 12 57	25 5 25	25* 8 11	25 2 58	25* 5 49
		27 2 25	29 18 53	29 21 39	28 16 29	29 19 20
		30 15 53				
III.	3 21 17	3 0 45	6* 11 19	6 14 46	6* 6 14	6* 9 49
	10 1 45	10 5 11	13 15 45	14 19 11	13* 10 40	13 14 15
	17* 6 8	17* 9 33	21 20 6	21 23 31	20 15 6	21 18 40
	24* 10 26	24 13 50	28 0 23	28 3 46	28 19 33	28 23 6
	31 14 40	31 18 3				
IV.	9 23 21	9 3 24	17* 6		4	17 23 35
	25 18 1	26 21 51				

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^h 778395. Days.	From Mean Noon of January 1.	
	At Mean Midnight,						Day of the Year.	Fraction of the Year.
	Logarithm of							
	A	B	C	D				
1	+0.8123	+1.2808	+9.8951	-0.9147	7 18 15.76	253	334	.914
2	0.7909	1.2836	9.8971	0.9142	7 14 19.85	254	335	.917
3	0.7683	1.2862	9.8992	0.9137	7 10 23.93	255	336	.920
4	+0.7444	+1.2887	+9.9012	-0.9132	7 6 28.02	256	337	.923
5	0.7188	1.2910	9.9033	0.9128	7 2 32.12	257	338	.925
6	0.6915	1.2932	9.9053	0.9124	6 58 36.21	258	339	.928
7	+0.6623	+1.2952	+9.9074	-0.9121	6 54 40.30	259	340	.931
8	0.6308	1.2971	9.9094	0.9118	6 50 44.40	260	341	.934
9	0.5966	1.2989	9.9114	0.9115	6 46 48.48	261	342	.936
10	+0.5593	+1.3005	+9.9135	-0.9112	6 42 52.57	262	343	.939
11	0.5185	1.3019	9.9155	0.9110	6 38 56.65	263	344	.942
12	0.4732	1.3032	9.9176	0.9108	6 35 0.73	264	345	.945
13	+0.4224	+1.3044	+9.9196	-0.9106	6 31 4.82	265	346	.947
14	0.3648	1.3054	9.9216	0.9105	6 27 8.90	266	347	.950
15	0.2981	1.3063	9.9236	0.9104	6 23 12.98	267	348	.953
16	+0.2192	+1.3071	+9.9257	-0.9103	6 19 17.07	268	349	.956
17	0.1224	1.3077	9.9277	0.9103	6 15 21.16	269	350	.958
18	9.9975	1.3082	9.9297	0.9103	6 11 25.25	270	351	.961
19	+9.8212	+1.3085	+9.9317	-0.9104	6 7 29.34	271	352	.964
20	+9.5193	1.3087	9.9337	0.9105	6 3 33.43	272	353	.966
21	-7.1873	1.3088	9.9356	0.9106	5 59 37.52	273	354	.969
22	-9.5234	+1.3087	+9.9376	-0.9108	5 55 41.61	274	355	.972
23	9.8234	1.3085	9.9396	0.9110	5 51 45.70	275	356	.975
24	9.9991	1.3082	9.9415	0.9112	5 47 49.79	276	357	.977
25	-0.1237	+1.3077	+9.9435	-0.9114	5 43 53.87	277	358	.980
26	0.2203	1.3071	9.9454	0.9117	5 39 57.96	278	359	.983
27	0.2992	1.3063	9.9473	0.9121	5 36 2.04	279	360	.986
28	-0.3658	+1.3054	+9.9492	-0.9125	5 32 6.12	280	361	.988
29	0.4234	1.3044	9.9511	0.9129	5 28 10.20	281	362	.991
30	0.4742	1.3032	9.9530	0.9133	5 24 14.29	282	363	.994
31	0.5195	1.3019	9.9549	0.9138	5 20 18.37	283	364	.997
32	-0.5604	+1.3004	+9.9567	-0.9143	5 16 22.46	284	365	1.000

266 OBLIQUITY OF THE ECLIPTIC, 8

1837.	Apparent Obliquity.	The Sun's		Equation of Equinoxes.		Me Longi of C ascen No
		Horizontal Parallax.	Aberration.	In Long.	In A.R. (in time.)	
Jan. 1	23° 27' 44" 75	8' 72	—20' 71	—10' 05	—0' 62	37° 3
11	44' 92	8' 72	20' 70	9' 33	0' 57	37
21	44' 97	8' 71	20' 69	8' 81	0' 54	36 3
31	23 27 45' 19	8' 70	20' 66	8' 89	0' 54	36
Feb. 10	45' 52	8' 69	20' 62	8' 80	0' 54	35 2
20	45' 73	8' 67	20' 58	8' 49	0' 52	34 5
March 2	23 27 45' 77	8' 65	20' 53	8' 75	0' 54	34 2
12	45' 92	8' 63	20' 47	9' 26	0' 57	33 5
22	46' 11	8' 60	20' 42	9' 43	0' 58	33 2
April 1	23 27 46' 03	8' 57	20' 36	9' 48	0' 58	32 4
11	45' 86	8' 55	20' 30	9' 87	0' 60	32 1
21	45' 85	8' 53	20' 24	10' 24	0' 63	31 4
May 1	23 27 45' 78	8' 51	20' 19	10' 03	0' 61	31 1
11	45' 51	8' 49	20' 14	9' 68	0' 59	30 4
21	45' 31	8' 47	20' 10	9' 69	0' 59	30 1
31	23 27 45' 31	8' 46	20' 07	9' 39	0' 57	29 3
June 10	45' 29	8' 45	20' 05	8' 56	0' 52	29
20	45' 15	8' 44	20' 03	8' 00	0' 49	28 3
30	23 27 45' 19	8' 44	20' 02	7' 73	0' 47	28
July 10	45' 44	8' 44	20' 03	7' 17	0' 44	27 3
20	45' 57	8' 44	20' 04	6' 49	0' 40	27
30	23 27 45' 63	8' 45	20' 06	6' 24	0' 38	26 2
Aug. 9	45' 91	8' 46	20' 09	6' 36	0' 39	25 5
19	46' 19	8' 48	20' 13	6' 18	0' 38	25 2
29	23 27 46' 30	8' 50	20' 17	5' 98	0' 37	24 5
Sept. 8	46' 34	8' 52	20' 22	6' 43	0' 39	24 2
18	46' 50	8' 54	20' 28	6' 84	0' 42	23 4
28	23 27 46' 61	8' 57	20' 34	6' 84	0' 42	23 1
Oct. 8	46' 44	8' 59	20' 40	6' 99	0' 43	22 4
18	46' 29	8' 62	20' 45	7' 42	0' 45	22 1
28	23 27 46' 29	8' 64	20' 51	7' 58	0' 46	21 4
Nov. 7	46' 13	8' 66	20' 56	7' 23	0' 44	21 1
17	45' 83	8' 68	20' 61	6' 98	0' 43	20 3
27	23 27 45' 71	8' 70	20' 65	6' 96	0' 43	20
Dec. 7	45' 71	8' 71	20' 68	6' 41	0' 39	19 3
17	45' 62	8' 72	20' 70	5' 53	0' 34	19
27	23 27 45' 52	8' 72	20' 71	5' 10	0' 31	18 3
37	23 27 45' 65	8' 72	—20' 71	—4' 76	—0' 29	17 5
Mean Obliquity						Daily Motion —3'
						37' 89.

JANUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	19 31 2.84	S. 23 59 10.7	0.1286786	0 47.4	314 42 59.9	S. 7 0 2.2	9.6164482
2	19 38 6.00	23 43 4.8	.1246911	0 50.6	318 17 50.7	6 59 58.8	.6110488
3	19 45 7.19	23 25 24.2	.1204014	0 53.7	321 58 12.8	6 58 14.1	.6054059
4	19 52 5.91	23 6 9.1	.1157923	0 56.7	325 44 27.7	6 54 40.4	.5995291
5	19 59 1.62	22 45 20.7	.1108468	0 59.7	329 36 58.0	6 49 9.6	.5934309
6	20 5 53.71	22 23 0.5	.1055460	1 2.6	333 36 5.9	6 41 33.2	.5871284
7	20 12 41.50	21 59 10.3	.0998698	1 5.4	337 42 14.1	6 31 42.6	.5806416
8	20 19 24.20	21 33 52.7	.0937979	1 8.2	341 55 44.6	6 19 29.0	.5739942
9	20 26 0.92	21 7 11.1	.0873080	1 10.9	346 16 59.3	6 4 43.9	.5672160
10	20 32 30.68	20 39 9.5	.0803783	1 13.4	350 46 18.8	5 47 19.2	.5603419
11	20 38 52.35	20 9 53.2	.0729863	1 15.9	355 24 1.9	5 27 7.8	.5534122
12	20 45 4.64	19 39 28.6	.0651101	1 18.1	0 10 25.4	5 4 3.9	.5464757
13	20 51 6.13	19 8 3.1	.0567290	1 20.2	5 5 42.9	4 38 3.4	.5395865
14	20 56 55.17	18 35 46.1	.0478235	1 22.1	10 10 3.5	4 9 4.8	.5328075
15	21 2 29.95	18 2 48.0	.0383782	1 23.7	15 23 31.9	3 37 9.9	.5262069
16	21 7 48.47	17 29 21.8	.0283820	1 25.0	20 46 5.7	3 2 24.4	.5198635
17	21 12 48.46	16 55 41.9	.0178293	1 26.1	26 17 36.8	2 24 58.7	.5138562
18	21 17 27.50	16 22 5.2	0.0067236	1 26.7	31 57 47.4	1 45 8.3	.5082715
19	21 21 42.93	15 48 50.3	.9950787	1 27.0	37 46 10.3	1 3 14.8	.5031982
20	21 25 31.96	15 16 18.0	.9829222	1 26.8	43 42 8.8	S. 0 19 45.3	.4987229
21	21 28 51.68	14 44 51.7	.9702972	1 26.2	49 44 55.2	N. 0 24 47.3	.4949278
22	21 31 39.13	14 14 55.6	.9572654	1 25.0	55 53 31.1	1 9 45.1	.4918887
23	21 33 51.42	13 46 54.9	.9439093	1 23.2	62 6 49.0	1 54 26.8	.4896677
24	21 35 25.83	13 21 16.4	.9303353	1 20.8	68 23 32.0	2 38 8.9	.4883133
25	21 36 19.99	12 58 25.8	.9166737	1 17.8	74 42 15.1	3 20 7.2	.4878559
26	21 36 32.07	12 38 47.2	.9030796	1 14.0	81 1 30.0	3 59 40.2	.4883053
27	21 36 0.93	12 22 42.9	.8897308	1 9.5	87 19 45.8	4 36 10.0	.4896519
28	21 34 46.35	12 10 30.7	.8768239	1 4.3	93 35 32.6	5 9 4.4	.4918653
29	21 32 49.22	12 2 23.6	.8645689	0 58.4	99 47 24.0	5 37 58.6	.4948976
30	21 30 11.71	11 58 27.7	.8531812	0 51.8	105 54 0.3	6 2 35.4	.4986858
31	21 26 57.23	11 58 42.7	.8428693	0 44.7	111 54 12.4	6 22 45.7	.5031555
32	21 23 10.61	S. 12 2 59.6	.8338271	0 36.9	117 46 58.8	N. 6 38 27.7	.95082237

FEBRUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	^{h m s} 21 23 10.61	^{° ' "} S. 12 2 59.6	9.8338271	^{h m} 0 36.9	^{° ' "} 117 46 58.8	^{° ' "} N. 6 38 27.7	9.5082237
2	21 18 57.83	12 11 2.5	.8262189	0 28.8	123 31 30.7	6 49 46.4	.5138037
3	21 14 25.85	12 22 28.3	.8201699	0 20.4	129 7 10.9	6 56 52.3	.5198076
4	21 9 42.29	12 36 48.1	.8157578	0 11.7	134 33 32.5	7 0 0.1	.5261487
5	21 4 54.94	12 53 30.0	.8130096	^{h m s} $\left\{ \begin{smallmatrix} 0 & 3.2 \\ 28 & 34.6 \end{smallmatrix} \right\}$	139 50 20.8	6 59 27.3	.5327460
6	21 0 11.49	13 11 59.2	.8118999	23 46.2	144 57 29.4	6 55 33.7	.5395237
7	20 55 39.06	13 31 42.1	.8123579	23 38.1	149 54 59.4	6 48 39.4	.5464117
8	20 51 23.88	13 52 6.5	.8142744	23 30.3	154 43 0.1	6 39 4.9	.5533476
9	20 47 31.15	14 12 43.3	.8175097	23 22.9	159 21 44.9	6 27 9.8	.5602770
10	20 44 4.86	14 33 7.9	.8219091	23 16.0	163 51 32.7	6 13 12.8	.5671517
11	20 41 7.86	14 52 59.1	.8273084	23 9.7	168 12 45.3	5 57 31.2	.5739306
12	20 38 41.98	15 12 0.0	.8335431	23 3.8	172 25 43.5	5 40 21.2	.5805788
13	20 36 48.03	15 29 57.5	.8404599	22 58.5	176 30 55.1	5 21 56.9	.5870669
14	20 35 26.09	15 46 41.8	.8479141	22 53.7	180 28 44.9	5 2 31.3	.5933706
15	20 34 35.64	16 2 5.2	.8557766	22 49.4	184 19 38.6	4 42 15.8	.5994702
16	20 34 15.61	16 16 2.8	.8639342	22 45.6	188 4 2.0	4 21 20.4	.6053492
17	20 34 24.72	16 28 30.8	.8722902	22 42.2	191 42 20.4	3 59 54.0	.6109943
18	20 35 1.42	16 39 27.1	.8807615	22 39.3	195 14 58.8	3 38 4.2	.6163953
19	20 36 4.06	16 48 50.1	.8892792	22 36.8	198 42 20.5	3 15 57.8	.6215452
20	20 37 30.92	16 56 39.2	.8977874	22 34.7	202 4 48.7	2 53 40.4	.6264370
21	20 39 20.30	17 2 54.4	.9062407	22 32.9	205 22 45.9	2 31 17.1	.6310670
22	20 41 30.56	17 7 35.7	.9146020	22 31.5	208 36 32.6	2 8 52.2	.6354318
23	20 44 0.09	17 10 43.6	.9228430	22 30.3	211 46 29.5	1 46 29.4	.6395293
24	20 46 47.40	17 12 18.5	.9309420	22 29.4	214 52 55.8	1 24 11.9	.6433587
25	20 49 51.04	17 12 21.3	.9388822	22 28.7	217 56 9.9	1 2 2.5	.6469191
26	20 53 9.72	17 10 52.8	.9466519	22 28.3	220 56 29.4	0 40 3.7	.6502109
27	20 56 42.21	17 7 53.7	.9542423	22 28.1	223 54 11.1	N. 0 18 17.3	.6532344
28	21 0 27.39	17 3 24.8	.9616484	22 28.1	226 49 31.2	S. 0 3 14.7	.6559903
29	21 4 24.22	S. 16 57 27.0	.9688670	22 28.3	229 42 45.0	S. 0 24 30.7	9.6584795

MARCH, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	^h 21 ^m 4 ^s 24.22	S. 16° 57' 27".0	9.9688670	^h 22 ^m 28.3	^o 229 ⁱ 42 ^{''} 45.0	S. 0° 24' 30".7	9.6584795
2	21 8 31.71	16 50 1.4	9.9758975	22 28.6	232 34 7.6	0 45 29.3	9.6607029
3	21 12 49.06	16 41 8.5	9.9827405	22 29.1	235 23 53.6	1 6 9.1	9.6626612
4	21 17 15.42	16 30 49.2	9.9893969	22 29.7	238 12 16.2	1 26 29.1	9.6643558
5	21 21 50.10	16 19 4.5	9.9958700	22 30.5	240 59 29.6	1 46 27.9	9.6657879
6	21 26 32.43	16 5 54.9	0.0021625	22 31.4	243 45 46.4	2 6 4.5	9.6669577
7	21 31 21.83	15 51 21.5	0.0082780	22 32.3	246 31 19.4	2 25 18.1	9.6678663
8	21 36 17.78	15 35 24.9	0.0142211	22 33.4	249 16 21.7	2 44 7.4	9.6685137
9	21 41 19.79	15 18 5.9	0.0199955	22 34.6	252 1 5.6	3 2 31.5	9.6689008
10	21 46 27.44	14 59 25.1	0.0256058	22 35.9	254 45 43.8	3 20 29.2	9.6690287
11	21 51 40.33	14 39 23.4	0.0310560	22 37.2	257 30 27.7	3 37 59.4	9.6688961
12	21 56 58.13	14 18 1.4	0.0363501	22 38.6	260 15 30.1	3 55 0.9	9.6685035
13	22 2 20.55	13 55 19.8	0.0414922	22 40.1	263 1 2.9	4 11 32.2	9.6678506
14	22 7 47.31	13 31 19.3	0.0464860	22 41.7	265 47 18.6	4 27 32.1	9.6669371
15	22 13 18.18	13 6 0.6	0.0513355	22 43.3	268 34 29.8	4 42 58.8	9.6657620
16	22 18 52.99	12 39 24.3	0.0560434	22 45.0	271 22 48.9	4 57 50.9	9.6643247
17	22 24 31.53	12 11 31.2	0.0606127	22 46.8	274 12 28.5	5 12 6.3	9.6626247
18	22 30 13.68	11 42 21.7	0.0650458	22 48.6	277 3 42.0	5 25 43.0	9.6606611
19	22 35 59.34	11 11 56.5	0.0693448	22 50.5	279 56 42.6	5 38 38.7	9.6584324
20	22 41 48.41	10 40 16.4	0.0735110	22 52.4	282 51 44.3	5 50 50.8	9.6559376
21	22 47 40.85	10 7 21.8	0.0775459	22 54.4	285 49 1.4	6 2 16.7	9.6531761
22	22 53 36.60	9 33 13.5	0.0814502	22 56.4	288 48 48.7	6 12 53.2	9.6501470
23	22 59 35.65	8 57 52.2	0.0852238	22 58.5	291 51 21.3	6 22 36.9	9.6468497
24	23 5 38.00	8 21 18.4	0.0888663	23 0.7	294 56 55.1	6 31 24.1	9.6432834
25	23 11 43.71	7 43 33.0	0.0923763	23 2.9	298 5 46.7	6 39 10.8	9.6394483
26	23 17 52.78	7 4 36.7	0.0957521	23 5.2	301 18 12.9	6 45 52.5	9.6353448
27	23 24 5.31	6 24 30.3	0.0989911	23 7.5	304 34 31.8	6 51 24.2	9.6309743
28	23 30 21.35	5 43 14.8	0.1020902	23 9.9	307 55 1.6	6 55 40.5	9.6263385
29	23 36 41.01	5 0 51.1	0.1050452	23 12.4	311 20 1.7	6 58 35.8	9.6214411
30	23 43 4.40	4 17 20.5	0.1078508	23 14.9	314 49 51.8	7 0 3.6	9.6162859
31	23 49 31.63	3 32 43.8	0.1105015	23 17.5	318 24 52.5	6 59 57.1	9.6108788
32	23 56 2.85	S. 2 47 2.8	0.1129897	23 20.1	322 5 25.0	S. 6 58 9.1	9.6052279

APRIL, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	^h 23 ^m 56 ^s 2' 85" S.	[°] 24 ['] 47 ["] 2' 8"	0' 1129897	^h 23 ^m 20' 1"	[°] 322 ['] 5 ["] 25' 0"	[°] 6 ['] 58 ["] 9' 1"	9' 6052279
2	0 2 38' 22"	2 0 18' 9"	' 1153081	23 22' 8"	325 51 51' 1"	6 54 31' 9"	' 5993441
3	0 9 17' 88"	1 12 33' 7"	' 1174469	23 25' 6"	329 44 33' 2"	6 48 57' 3"	' 5932396
4	0 16 2' 00" S.	0 23 49' 4"	' 1193956	23 28' 4"	333 43 53' 4"	6 41 16' 8"	' 5869313
5	0 22 50' 74" N.	0 25 51' 8"	' 1211431	23 31' 4"	337 50 14' 5"	6 31 21' 8"	' 5804393
6	0 29 44' 27"	1 16 27' 2"	' 1226750	23 34' 5"	342 3 58' 7"	6 19 3' 6"	' 5737872
7	0 36 42' 77"	2 7 53' 9"	' 1239779	23 37' 6"	346 25 27' 9"	6 4 13' 6"	' 5670053
8	0 43 46' 36"	3 0 8' 2"	' 1250347	23 40' 8"	350 55 2' 6"	5 46 43' 9"	' 5601283
9	0 50 55' 17"	3 53 5' 9"	' 1258284	23 44' 1"	355 33 1' 2"	5 26 27' 2"	' 5531978
10	0 58 9' 31"	4 46 42' 5"	' 1263399	23 47' 5"	0 19 40' 9"	5 3 17' 9"	' 5462618
11	1 5 28' 84"	5 40 52' 6"	' 1265491	23 51' 0"	5 15 14' 6"	4 37 11' 8"	' 5393731
12	1 12 53' 76"	6 35 30' 0"	' 1264344	23 54' 6"	10 19 51' 8"	4 8 7' 7"	' 5326003
13	1 20 24' 05"	7 30 27' 8"	' 1259734	23 58' 2"	15 33 36' 7"	3 36 7' 4"	' 5260071
14	1 27 59' 57"	8 25 38' 1"	' 1251429	* *	20 56 27' 3"	3 1 16' 8"	' 5196708
15	1 35 40' 14"	9 20 52' 2"	' 1239204	0 1' 9"	26 28 14' 3"	2 23 46' 3"	' 5136755
16	1 43 25' 46"	10 16 0' 2"	' 1222824	0 5' 6"	32 8 39' 8"	1 43 51' 9"	' 5081055
17	1 51 15' 12"	11 10 51' 8"	' 1202069	0 9' 5"	37 57 16' 8"	1 1 55' 0"	' 5030492
18	1 59 8' 61"	12 5 15' 5"	' 1176742	0 13' 6"	43 53 27' 6"	S. 0 18 23' 1"	' 4985935
19	2 7 5' 30"	12 58 59' 5"	' 1146655	0 17' 6"	49 56 25' 2"	N. 0 26 10' 7"	' 4948205
20	2 15 4' 45"	13 51 51' 3"	' 1111671	0 21' 7"	56 5 10' 9"	1 11 8' 8"	' 4918055
21	2 23 5' 16"	14 43 38' 0"	' 1071672	0 25' 8"	62 18 35' 8"	1 55 49' 3"	' 4896105
22	2 31 6' 49"	15 34 7' 0"	' 1026595	0 29' 9"	68 35 23' 1"	2 39 28' 7"	' 4882831
23	2 39 7' 34"	16 23 6' 0"	' 0976425	0 34' 0"	74 54 8' 2"	3 21 23' 1"	' 4878535
24	2 47 6' 60"	17 10 23' 1"	' 0921194	0 38' 0"	81 13 22' 0"	4 0 50' 9"	' 4883307
25	2 55 3' 07"	17 55 47' 5"	' 0860986	0 42' 0"	87 31 34' 1"	4 37 14' 4"	' 4897043
26	3 2 55' 59"	18 39 9' 5"	' 0795932	0 45' 9"	93 47 14' 6"	5 10 1' 7"	' 4919437
27	3 10 42' 91"	19 20 20' 9"	' 0726201	0 49' 8"	99 58 57' 6"	5 38 48' 1"	' 4950004
28	3 18 23' 86"	19 59 14' 4"	' 0652012	0 53' 5"	106 5 23' 3"	6 3 16' 8"	' 4988111
29	3 25 57' 30"	20 35 44' 7"	' 0573601	0 57' 1"	112 5 21' 8"	6 23 18' 8"	' 5033006
30	3 33 22' 15"	21 9 48' 2"	' 0491228	1 0' 6"	117 57 53' 0"	6 38 52' 6"	' 5083860
31	3 40 37' 36" N			1 3' 9"	123 42 8' 3"	N. 6 50 3' 3"	9' 5139803

MAY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	^h 3 ^m 40 ^s 37.36	N. 21 41 21.8	0.0405188	^h 1 3.9	^o 123 ⁱ 42 ["] 8.3	N. 6 50 3.3	9.5139803
2	3 47 42.03	22 10 24.6	.0315758	1 7.1	129 17 31.0	6 57 1.6	.5199959
3	3 54 35.21	22 36 57.6	.0223228	1 10.0	134 43 35.2	7 0 2.3	.5263470
4	4 1 16.11	23 1 0.4	.0127895	1 12.8	140 0 5.3	6 59 23.1	.5329513
5	4 7 43.95	23 22 35.8	0.0030046	1 15.3	145 6 55.4	6 55 23.6	.5397332
6	4 13 58.02	23 41 46.0	9.9929956	1 17.6	150 4 7.8	6 48 24.1	.5466239
7	4 19 57.65	23 58 34.5	.9827907	1 19.6	154 51 50.7	6 38 45.0	.5535603
8	4 25 42.23	24 13 4.6	.9724165	1 21.4	159 30 18.8	6 26 45.9	.5604890
9	4 31 11.14	24 25 20.5	.9618995	1 22.9	163 59 50.2	6 12 45.4	.5673617
10	4 36 23.83	24 35 26.1	.9512647	1 24.1	168 20 46.2	5 57 1.0	.5741374
11	4 41 19.76	24 43 25.8	.9405387	1 25.1	172 33 30.5	5 39 48.4	.5807815
12	4 45 58.39	24 49 23.8	.9297475	1 25.8	176 38 27.8	5 21 22.1	.5872644
13	4 50 19.23	24 53 24.5	.9189166	1 26.2	180 36 4.1	5 1 54.8	.5935627
14	4 54 21.80	24 55 31.9	.9080736	1 26.3	184 26 45.2	4 41 37.9	.5996553
15	4 58 5.66	24 55 50.7	.8972452	1 26.1	188 10 56.8	4 20 41.5	.6055272
16	5 1 30.37	24 54 24.6	.8864614	1 25.5	191 49 4.2	3 59 14.3	.6111655
17	5 4 35.53	24 51 18.0	.8757517	1 24.6	195 21 31.9	3 37 23.9	.6165596
18	5 7 20.77	24 46 34.7	.8651487	1 23.4	198 48 44.2	3 15 17.1	.6217016
19	5 9 45.80	24 40 18.5	.8546865	1 21.9	202 11 3.7	2 52 59.5	.6265858
20	5 11 50.35	24 32 33.6	.8444009	1 20.0	205 28 53.0	2 30 36.1	.6312074
21	5 13 34.25	24 23 23.8	.8343316	1 17.8	208 42 32.7	2 8 11.2	.6355640
22	5 14 57.43	24 12 53.0	.8245194	1 15.2	211 52 22.8	1 45 48.5	.6396537
23	5 15 59.85	24 1 5.3	.8150073	1 12.3	214 58 43.1	1 23 31.4	.6434749
24	5 16 41.66	23 48 4.8	.8058421	1 9.0	218 1 51.6	1 1 22.3	.6470273
25	5 17 3.09	23 33 56.0	.7970711	1 5.4	221 2 6.2	0 39 23.7	.6503109
26	5 17 4.67	23 18 43.8	.7887450	1 1.5	223 59 43.5	N. 0 17 37.7	.6533261
27	5 16 46.92	23 2 33.3	.7809141	0 57.2	226 54 59.5	S. 0 3 53.9	.6560739
28	5 16 10.63	22 45 30.3	.7736309	0 52.7	229 48 9.7	0 25 9.4	.6585550
29	5 15 16.86	22 27 41.3	.7669475	0 47.9	232 39 29.1	0 46 7.4	.6607702
30	5 14 6.74	22 9 13.5	.7609141	0 42.8	235 29 12.2	1 6 46.7	.6627204
31	5 12 41.70	21 50 14.4	.7555797	0 37.5	238 17 32.6	1 27 6.0	.6644070
32	5 11 3.37	N. 21 30 53.0	9.7509896	0 31.9	241 4 44.1	S. 1 47 4.1	9.6658309

JUNE, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. Rad. V	
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.	
1	^{h m s} 5 11 3·37	^{° ′ ″} N. 21 30 53·0	9·7509896	^{h m} 0 31·9	^{° ′ ″} 241 4 44·1	^{° ′ ″} S. 1 47 4·1	9·6658	
2	5 9 13·52	21 11 18·5	·7471850	0 26·1	243 51 0·0	2 6 40·2	·6669	
3	5 7 14·16	20 51 41·2	·7442015	0 20·2	246 36 32·5	2 25 53·0	·6678	
4	5 5 7·41	20 32 11·8	·7420676	0 14·1	249 21 34·4	2 44 41·6	·6685	
5	5 2 55·51	20 13 1·4	·7408043	0 8·0	252 6 18·4	3 3 4·9	·6689	
6	5 0 40·74	19 54 21·6	·7404248	{ ^{0 35·7}	254 50 56·7	3 21 1·8	·6690	
7	4 58 25·47	19 36 23·9	·7409324	23 49·6	257 35 41·4	3 38 31·2	·6688	
8	4 56 11·99	19 19 19·7	·7423234	23 43·5	260 20 45·0	3 55 31·8	·6684	
9	4 54 2·62	19 3 19·8	·7445825	23 37·5	263 6 19·2	4 12 2·2	·6678	
10	4 51 59·50	18 48 34·7	·7476891	23 31·7	265 52 36·4	4 28 1·0	·6669	
11	4 50 4·68	18 35 13·1	·7516135	23 26·1	268 39 49·5	4 43 26·8	·6657	
12	4 48 20·04	18 23 23·2	·7563191	23 20·6	271 28 10·8	4 58 17·8	·6642	
13	4 46 47·27	18 13 12·2	·7617651	23 15·4	274 17 53·3	5 12 32·1	·6625	
14	4 45 27·92	18 4 45·2	·7679042	23 10·4	277 9 9·8	5 26 7·5	·6605	
15	4 44 23·28	17 58 6·2	·7746885	23 5·6	280 2 14·6	5 39 1·9	·6583	
16	4 43 34·49	17 53 17·8	·7820662	23 1·1	282 57 20·5	5 51 12·7	·6558	
17	4 43 2·49	17 50 21·4	·7899854	22 56·9	285 54 42·4	6 2 37·1	·6530	
18	4 42 48·02	17 49 16·7	·7983942	22 53·0	288 54 34·9	6 13 12·0	·6500	
19	4 42 51·69	17 50 2·2	·8072416	22 49·4	291 57 13·2	6 22 54·0	·6467	
20	4 43 13·95	17 52 35·7	·8164772	22 46·1	295 2 53·2	6 31 39·5	·6431	
21	4 43 55·13	17 56 53·3	·8260537	22 43·2	298 11 51·5	6 39 24·2	·6393	
22	4 44 55·49	18 2 51·4	·8359246	22 40·6	301 24 24·9	6 46 3·8	·6352	
23	4 46 15·17	18 10 23·6	·8460485	22 38·3	304 40 51·2	6 51 33·3	·6308	
24	4 47 54·24	18 19 25·3	·8563828	22 36·3	308 1 28·9	6 55 47·2	·6261	
25	4 49 52·71	18 29 49·7	·8668901	22 34·7	311 26 37·5	6 58 39·9	·6212	
26	4 52 10·61	18 41 30·2	·8775345	22 33·3	314 56 36·9	7 0 4·8	·6161	
27	4 54 47·91	18 54 19·3	·8882822	22 32·3	318 31 47·3	6 59 55·4	·6107	
28	4 57 44·52	19 8 9·4	·8991018	22 31·6	322 12 30·6	6 58 4·1	·6050	
29	5 1 0·43	19 22 52·8	·9099635	22 31·2	325 59 7·9	6 54 23·4	·5991	
30	5 4 35·56	19 38 20·9	·9208386	22 31·2	329 52 1·9	6 48 45·0	·5930	
31	5 8 29·84	N. 19 54 25·0	·9317007	22 31·5	333 51 35·0	S. 6 41 0·6	9·5867	

JULY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
1	h m s	° ' "		h m	° ' "	° ' "		
1	5 8 29.84	N. 19 54 25.0	9.9317007	22 31.5	333 51 35.0	S. 6 41 0.6	9.5867318	
2	5 12 43.23	20 10 56.4	.9425225	22 32.0	337 58 9.6	6 31 1.3	.5802340	
3	5 17 15.66	20 27 45.6	.9532788	22 32.9	342 12 7.9	6 18 38.5	.5735771	
4	5 22 7.06	20 44 42.9	.9639443	22 34.1	346 33 51.6	6 3 43.7	.5667921	
5	5 27 17.36	21 1 38.3	.9744935	22 35.6	351 3 41.5	5 46 9.0	.5599127	
6	5 32 46.46	21 18 21.4	.9849002	22 37.5	355 41 55.9	5 25 47.1	.5529813	
7	5 38 34.23	21 34 41.1	9.9951388	22 39.6	0 28 51.5	5 2 32.4	.5460459	
8	5 44 40.49	21 50 26.5	0.0051826	22 42.1	5 24 41.6	4 36 20.9	.5391615	
9	5 51 5.00	22 5 25.8	.0150043	22 44.8	10 29 35.6	4 7 11.3	.5323909	
10	5 57 47.45	22 19 27.3	.0245755	22 47.9	15 43 37.1	3 35 5.7	.5258042	
11	6 4 47.40	22 32 18.7	.0338674	22 51.2	21 6 43.6	3 0 10.0	.5194786	
12	6 12 4.29	22 43 47.9	.0428516	22 54.8	26 38 46.9	2 22 34.8	.5134942	
13	6 19 37.44	22 53 43.0	.0514984	22 58.7	32 19 27.7	1 42 36.3	.5079389	
14	6 27 26.02	23 1 50.9	.0597788	23 2.8	38 8 19.3	1 0 36.2	.5028998	
15	6 35 28.98	23 8 1.4	.0676652	23 7.1	44 4 43.7	S. 0 17 1.8	.4984639	
16	6 43 45.16	23 12 3.6	.0751308	23 11.6	50 7 53.3	N. 0 27 33.4	.4947131	
17	6 52 13.14	23 13 47.4	.0821515	23 16.3	56 16 47.8	1 12 31.5	.4917227	
18	7 0 51.46	23 13 4.7	.0887068	23 21.2	62 30 20.5	1 57 10.8	.4895539	
19	7 9 38.44	23 9 48.4	.0947787	23 26.2	68 47 11.9	2 40 47.5	.4882542	
20	7 18 32.32	23 3 53.6	.1003548	23 31.3	75 5 59.8	3 22 38.1	.4878525	
21	7 27 31.25	22 55 17.0	.1054263	23 36.4	81 25 13.2	4 2 0.8	.4883578	
22	7 36 33.43	22 43 57.6	.1099905	23 41.5	87 43 22.0	4 38 18.1	.4897589	
23	7 45 37.02	22 29 56.1	.1140485	23 46.6	93 58 56.1	5 10 58.3	.4920245	
24	7 54 40.31	22 13 15.2	.1176075	23 51.7	100 10 29.8	5 39 37.1	.4951054	
25	8 3 41.62	21 53 59.4	.1206782	23 56.8	106 16 44.5	6 3 57.7	.4989384	
26	8 12 39.50	21 32 14.3	.1232753	* *	112 16 30.1	6 23 51.5	.5034476	
27	8 21 32.58	21 8 7.2	.1254168	0 1.7	118 8 46.8	6 39 17.1	.5085503	
28	8 30 19.75	20 41 46.1	.1271226	0 6.5	123 52 46.8	6 50 19.9	.5141595	
29	8 39 0.01	20 13 19.5	.1284142	0 11.3	129 27 52.8	6 57 10.6	.5201869	
30	8 47 32.56	19 42 56.6	.1293147	0 15.9	134 53 39.2	7 0 4.3	.5265465	
31	8 55 56.80	19 10 46.5	.1298468	0 20.4	140 9 51.8	6 59 18.7	.5331580	
32	9 4 12.24	N. 18 36 58.4	0.1300335	0 24.7	145 16 24.1	N. 6 55 13.4	9.5399447	

AUGUST, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log Rad.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
1	9 4 12.24	N. 18 36 58.4	0.1300335	0 24.7	145 16 24.1	N. 6 55 13.4	9.539	
2	9 12 18.54	18 1 41.4	.1298966	0 28.9	150 13 18.8	6 48 8.7	.546	
3	9 20 15.50	17 25 4.2	.1294573	0 32.9	155 0 44.5	6 38 25.0	.553	
4	9 28 3.02	16 47 15.3	.1287357	0 36.8	159 38 55.9	6 26 21.9	.560	
5	9 35 41.08	16 8 22.4	.1277506	0 40.5	164 8 10.9	6 12 18.0	.567	
6	9 43 9.71	15 28 33.3	.1265191	0 44.0	168 28 51.3	5 56 30.6	.574	
7	9 50 29.07	14 47 54.9	.1250573	0 47.4	172 41 20.8	5 39 15.6	.580	
8	9 57 39.28	14 6 33.8	.1233793	0 50.6	176 46 4.3	5 20 47.2	.587	
9	10 4 40.54	13 24 36.2	.1214982	0 53.7	180 43 27.6	5 1 18.3	.593	
10	10 11 33.08	12 42 7.6	.1194258	0 56.6	184 33 56.4	4 41 0.1	.599	
11	10 18 17.12	11 59 13.5	.1171720	0 59.4	188 17 56.7	4 20 2.5	.605	
12	10 24 52.90	11 15 58.8	.1147455	1 2.1	191 55 53.6	3 58 34.5	.611	
13	10 31 20.69	10 32 28.0	.1121553	1 4.6	195 28 11.6	3 36 43.5	.616	
14	10 37 40.71	9 48 45.4	.1094073	1 7.0	198 55 14.7	3 14 36.2	.621	
15	10 43 53.22	9 4 54.9	.1065075	1 9.3	202 17 25.7	2 52 18.3	.626	
16	10 49 58.45	8 21 0.2	.1034606	1 11.4	205 35 6.8	2 29 54.8	.631	
17	10 55 56.63	7 37 4.8	.1002705	1 13.4	208 48 39.0	2 7 30.0	.635	
18	11 1 48.00	6 53 11.7	.0969406	1 15.3	211 58 22.3	1 45 7.6	.639	
19	11 7 32.70	6 9 24.3	.0934724	1 17.1	215 4 36.3	1 22 50.5	.643	
20	11 13 10.97	5 25 45.3	.0898682	1 18.8	218 7 39.1	1 0 41.6	.647	
21	11 18 42.97	4 42 17.5	.0861285	1 20.4	221 7 48.4	0 38 43.4	.650	
22	11 24 8.86	3 59 3.5	.0822536	1 21.9	224 5 21.0	N. 0 16 57.8	.653	
23	11 29 28.74	3 16 6.0	.0782437	1 23.3	227 0 32.8	S. 0 4 33.2	.656	
24	11 34 42.77	2 33 27.2	.0740971	1 24.6	229 53 39.5	0 25 48.2	.658	
25	11 39 51.01	1 51 9.8	.0698129	1 25.7	232 44 56.1	0 46 45.7	.660	
26	11 44 53.52	1 9 16.4	.0653892	1 26.8	235 34 36.6	1 7 24.4	.662	
27	11 49 50.36	N. 0 27 49.2	.0608242	1 27.8	238 22 54.6	1 27 42.9	.664	
28	11 54 41.53	S. 0 13 9.3	.0561147	1 28.7	241 10 4.2	1 47 40.5	.665	
29	11 59 27.02	0 53 36.6	.0512579	1 29.6	243 56 17.9	2 7 15.8	.667	
30	12 4 6.79	1 33 30.2	.0462503	1 30.4	246 41 49.0	2 26 27.9	.667	
31	12 8 40.77	2 12 47.4	.0410888	1 31.1	249 26 50.1	2 45 15.8	.668	
32	12 13 8.86	S. 2 51 25.6	.0357695	1 31.6	252 11 33.6	S. 3 3 38.3	.668	

SEPTEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	^h 12 ^m 13 ^s 8'86 S.	[°] 25 ['] 51 ["] 25'6	0'0357695	^h 1 ^m 31'6	[°] 252 ['] 11 ["] 33'6	[°] S. 3 ['] 38'3	9'6689200
2	12 17 30'92	3 29 22'0	'0302883	1 31'9	254 56 11'7	3 21 34'4	'6690311
3	12 21 46'76	4 6 33'4	'0246414	1 32'2	257 40 56'3	3 39 2'9	'6688822
4	12 25 56'17	4 42 56'7	'0188246	1 32'3	260 26 0'0	3 56 2'4	'6684732
5	12 29 58'89	5 18 28'8	'0128336	1 32'4	263 11 35'1	4 12 31'9	'6678039
6	12 33 54'60	5 53 5'8	'0066644	1 32'4	265 57 54'0	4 28 29'8	'6668737
7	12 37 42'96	6 26 44'0	0'0003138	1 32'3	268 45 9'1	4 43 54'6	'6656822
8	12 41 23'52	6 59 19'2	9'9937783	1 32'0	271 33 32'6	4 58 44'5	'6642284
9	12 44 55'82	7 30 46'6	'9870552	1 31'6	274 23 17'4	5 12 57'5	'6625117
10	12 48 19'32	8 1 1'6	'9801421	1 31'0	277 14 37'3	5 26 31'8	'6605313
11	12 51 33'41	8 29 58'6	'9730385	1 30'3	280 7 44'9	5 39 24'9	'6582857
12	12 54 37'41	8 57 31'7	'9657444	1 29'5	283 2 54'7	5 51 34'3	'6557742
13	12 57 30'56	9 23 34'3	'9582615	1 28'4	286 0 20'6	6 2 57'1	'6529959
14	13 0 12'02	9 47 59'6	'9505932	1 27'1	289 0 17'7	6 13 30'5	'6499500
15	13 2 40'83	10 10 39'2	'9427473	1 25'6	292 3 0'8	6 23 10'9	'6466356
16	13 4 56'04	10 31 25'0	'9347324	1 23'9	295 8 46'3	6 31 54'6	'6430525
17	13 6 56'51	10 50 7'0	'9265626	1 22'0	298 17 50'3	6 39 37'4	'6392003
18	13 8 41'09	11 6 35'3	'9182557	1 19'8	301 30 30'3	6 46 14'9	'6350802
19	13 10 8'52	11 20 38'2	'9098364	1 17'3	304 47 4'0	6 51 42'2	'6306930
20	13 11 17'47	11 32 3'4	'9013354	1 14'5	308 7 49'8	6 55 53'8	'6260410
21	13 12 6'60	11 40 37'6	'8927923	1 11'3	311 33 7'1	6 58 43'8	'6211272
22	13 12 34'56	11 46 6'7	'8842555	1 7'8	315 3 15'6	7 0 6'0	'6159561
23	13 12 40'04	11 48 15'9	'8757876	1 4'0	318 38 35'9	6 59 53'6	'6105333
24	13 12 21'78	11 46 50'2	'8674596	0 59'7	322 19 29'4	6 57 59'1	'6048678
25	13 11 38'80	11 41 34'5	'8593588	0 55'1	326 6 18'0	6 54 14'9	'5989698
26	13 10 30'24	11 32 14'7	'8515886	0 50'0	329 59 23'8	6 48 32'9	'5928522
27	13 8 55'76	11 18 38'6	'8442669	0 44'5	333 59 9'1	6 40 44'4	'5865320
28	13 6 55'43	11 0 36'7	'8375277	0 38'5	338 5 56'7	6 30 40'9	'5800291
29	13 4 29'97	10 38 4'4	'8315188	0 32'2	342 20 8'6	6 18 13'6	'5733681
30	13 1 40'85	10 11 2'6	'8263982	0 25'5	346 42 6'8	6 3 14'2	'5665791
31	12 58 30'47 S.	9 39 40'4	9'8223300	0 18'4	351 12 11'5	S. 5 45 34'4	9'5596979

OCTOBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log Rad.	
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	N	
1	12 58 30.47	S. 9 39 40.4	9.8223300	0 18.4	351 12 11.5	S. 5 45 34.4	9.559	
2	12 55 2.10	9 4 16.3	.8194759	0 11.0	355 50 41.6	5 25 7.3	.552	
3	12 51 20.01	8 25 19.1	.8179877	{ 23 55.0	0 37 53.4	5 1 47.2	.545	
4	12 47 29.36	7 43 28.4	.8179941	23 47.8	5 34 0.1	4 35 30.3	.538	
5	12 43 36.05	6 59 34.4	.8195944	23 40.1	10 39 10.8	4 6 15.3	.532	
6	12 39 46.47	6 14 35.7	.8228451	23 32.6	15 53 29.5	3 34 4.3	.525	
7	12 36 7.27	5 29 37.6	.8277549	23 25.3	21 16 53.3	2 59 3.5	.519	
8	12 32 44.98	4 45 47.0	.8342811	23 18.4	26 49 12.8	2 21 23.7	.513	
9	12 29 45.63	4 4 10.1	.8423298	23 12.0	32 30 9.0	1 41 21.3	.507	
10	12 27 14.50	3 25 47.2	.8517640	23 6.0	38 19 15.1	0 59 17.7	.502	
11	12 25 15.91	2 51 31.1	.8624085	23 0.7	44 15 52.6	S. 0 15 40.9	.498	
12	12 23 53.01	2 22 3.1	.8740659	22 56.0	50 19 13.5	N. 0 28 55.6	.494	
13	12 23 7.81	1 57 54.5	.8865226	22 51.9	56 28 18.2	1 13 53.8	.491	
14	12 23 1.18	1 39 23.7	.8995648	22 48.5	62 41 58.0	1 58 31.9	.489	
15	12 23 32.91	1 26 38.8	.9129860	22 45.7	68 58 55.0	2 42 6.1	.488	
16	12 24 41.94	1 19 38.1	.9265946	22 43.4	75 17 44.2	3 23 52.8	.487	
17	12 26 26.51	1 18 12.0	.9402196	22 41.8	81 36 57.2	4 3 10.3	.488	
18	12 28 44.31	1 22 4.6	.9537124	22 40.6	87 55 2.8	4 39 21.3	.489	
19	12 31 32.71	1 30 55.4	.9669498	22 39.9	94 10 31.6	5 11 54.7	.492	
20	12 34 48.86	1 44 20.6	.9798311	22 39.6	100 21 57.1	5 40 25.8	.495	
21	12 38 29.89	2 1 54.9	.99922804	22 39.7	106 28 1.3	6 4 38.3	.499	
22	12 42 32.94	2 23 12.3	0.0042407	22 40.1	112 27 34.6	6 24 23.9	.503	
23	12 46 55.30	2 47 46.9	.0156716	22 40.8	118 19 35.7	6 39 41.3	.508	
24	12 51 34.45	3 15 13.7	.0265530	22 41.7	124 3 20.4	6 50 36.2	.514	
25	12 56 28.06	3 45 8.7	.0368720	22 42.9	129 38 10.0	6 57 19.5	.520	
26	13 1 34.04	4 17 10.0	.0466282	22 44.2	135 3 39.5	7 0 6.1	.526	
27	13 6 50.59	4 50 57.0	.0558284	22 45.7	140 19 34.2	6 59 14.1	.533	
28	13 12 16.07	5 26 11.2	.0644862	22 47.3	145 25 49.0	6 55 2.9	.540	
29	13 17 49.10	6 2 35.8	.0726180	22 49.0	150 22 26.2	6 47 53.1	.547	
30	13 23 28.48	6 39 55.9	.0802442	22 50.8	155 9 35.1	6 38 4.8	.553	
31	13 29 13.23	7 17 58.1	.0873867	22 52.7	159 47 30.1	6 25 57.6	.560	
32	13 35 2.49	S. 7 56 30.4	0.0940670	22 54.7	164 16 29.4	N. 6 11 50.3	9.567	

NOVEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	13 35 2.49	S. 7 56 30.4	0.0940670	22 54.7	164 16 29.4	N. 6 11 50.3	9.5677845
2	13 40 55.55	8 35 22.2	.1003088	22 56.7	168 36 54.9	5 56 0.0	.5745531
3	13 46 51.84	9 14 24.5	.1061342	22 58.7	172 49 10.3	5 38 42.4	.5811881
4	13 52 50.90	9 53 29.0	.1115651	23 0.8	176 53 40.1	5 20 12.1	.5876608
5	13 58 52.33	10 32 28.6	.1166219	23 2.9	180 50 50.6	5 0 41.3	.5939462
6	14 4 55.85	11 11 16.7	.1213255	23 5.0	184 41 7.3	4 40 21.4	.6000262
7	14 11 1.19	11 49 48.0	.1256939	23 7.2	188 24 56.1	4 19 23.1	.6058844
8	14 17 8.21	12 27 57.3	.1297446	23 9.4	192 2 42.2	3 57 54.2	.6115077
9	14 23 16.76	13 5 40.6	.1334942	23 11.6	195 34 50.3	3 36 2.6	.6168864
10	14 29 26.77	13 42 53.6	.1369576	23 13.8	199 1 44.1	3 13 54.8	.6220128
11	14 35 38.16	14 19 33.1	.1401488	23 16.1	202 23 46.9	2 51 36.7	.6268803
12	14 41 50.91	14 55 35.8	.1430806	23 18.4	205 41 20.4	2 29 13.0	.6314859
13	14 48 4.98	15 30 58.9	.1457645	23 20.8	208 54 45.3	2 6 48.3	.6358262
14	14 54 20.41	16 5 39.9	.1482111	23 23.1	212 4 22.4	1 44 25.8	.6398992
15	15 0 37.18	16 39 36.3	.1504301	23 25.5	215 10 30.6	1 22 8.9	.6437037
16	15 6 55.33	17 12 46.0	.1524303	23 27.9	218 13 28.0	1 0 0.3	.6472393
17	15 13 14.91	17 45 6.9	.1542194	23 30.3	221 13 32.4	0 38 2.5	.6505065
18	15 19 35.94	18 16 37.3	.1558047	23 32.7	224 11 0.9	N. 0 16 17.3	.6535050
19	15 25 58.47	18 47 15.1	.1571922	23 35.2	227 6 8.7	S. 0 5 13.3	.6562363
20	15 32 22.52	19 16 58.6	.1583872	23 37.7	229 59 11.8	0 26 27.8	.6587007
21	15 38 48.17	19 45 46.2	.1593951	23 40.2	232 50 25.1	0 47 24.6	.6608995
22	15 45 15.43	20 13 36.2	.1602192	23 42.8	235 40 2.7	1 8 2.7	.6628333
23	15 51 44.36	20 40 27.1	.1608637	23 45.3	238 28 18.2	1 28 20.7	.6645035
24	15 58 14.99	21 6 17.5	.1613311	23 47.9	241 15 26.1	1 48 17.6	.6659108
25	16 4 47.35	21 31 5.7	.1616237	23 50.5	244 1 38.5	2 7 52.3	.6670564
26	16 11 21.44	21 54 50.3	.1617437	23 53.1	246 47 8.3	2 27 3.6	.6679404
27	16 17 57.32	22 17 29.7	.1616919	23 55.8	249 32 8.7	2 45 50.7	.6685638
28	16 24 34.96	22 39 2.7	.1614694	23 58.6	252 16 51.8	3 4 12.4	.6689269
29	16 31 14.37	22 59 27.6	.1610760	* *	255 1 29.8	3 22 7.6	.6690300
30	16 37 55.55	23 18 43.1	.1605120	0 1.3	257 46 15.1	3 39 35.1	.6688731
31	16 44 38.46	S. 23 36 47.6	0.1597758	0 4.1	260 31 20.3	S. 3 56 33.8	9.6684561

DECEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. V.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	16 44 38.46	S. 23 36 47.6	0.1597758	0 4.1	260 31 20.3	S. 3 56 33.8	9.66845
2	16 51 23.05	23 53 39.7	.1588666	0 6.9	263 16 56.4	4 13 2.3	.66777
3	16 58 9.32	24 9 17.9	.1577824	0 9.8	266 3 16.7	4 28 59.2	.66684
4	17 4 57.20	24 23 40.9	.1565207	0 12.7	268 50 33.3	4 44 22.9	.66564
5	17 11 46.60	24 36 47.1	.1550784	0 15.5	271 38 58.9	4 59 11.7	.66417
6	17 18 37.45	24 48 35.2	.1534523	0 18.4	274 28 46.3	5 13 23.6	.66245
7	17 25 29.66	24 59 3.6	.1516379	0 21.4	277 20 9.3	5 26 56.6	.66046
8	17 32 23.11	25 8 11.1	.1496306	0 24.3	280 13 20.4	5 39 48.3	.65821
9	17 39 17.65	25 15 56.1	.1474250	0 27.3	283 8 34.1	5 51 56.2	.65569
10	17 46 13.14	25 22 17.5	.1450151	0 30.3	286 6 4.5	6 3 17.7	.65290
11	17 53 9.40	25 27 13.9	.1423935	0 33.3	289 6 6.5	6 13 49.4	.64985
12	18 0 6.21	25 30 43.9	.1395531	0 36.3	292 8 55.1	6 23 28.1	.64652
13	18 7 3.36	25 32 46.6	.1364851	0 39.3	295 14 46.7	6 32 9.9	.64293
14	18 14 0.57	25 33 20.6	.1331804	0 42.3	298 23 57.6	6 39 50.8	.63907
15	18 20 57.55	25 32 25.1	.1296285	0 45.3	301 36 44.5	6 46 26.2	.63495
16	18 27 53.96	25 29 59.0	.1258188	0 48.3	304 53 25.7	6 51 51.2	.63055
17	18 34 49.43	25 26 1.6	.1217386	0 51.3	308 14 19.5	6 56 0.3	.62589
18	18 41 43.55	25 20 32.4	.1173746	0 54.3	311 39 45.2	6 58 47.8	.62097
19	18 48 35.85	25 13 30.6	.1127136	0 57.3	315 10 2.9	7 0 7.2	.61579
20	18 55 25.78	25 4 56.7	.1077395	1 0.2	318 45 33.3	6 59 51.7	.61036
21	19 2 12.73	24 54 50.3	.1024364	1 3.0	322 26 37.3	6 57 53.9	.60469
22	19 8 56.08	24 43 12.1	.0967864	1 5.8	326 13 37.3	6 54 6.2	.59878
23	19 15 35.00	24 30 3.1	.0907718	1 8.4	330 6 54.9	6 48 20.3	.59266
24	19 22 8.67	24 15 24.9	.0843728	1 11.0	334 6 53.2	6 40 27.8	.58633
25	19 28 36.09	23 59 18.9	.0775699	1 13.5	338 13 54.5	6 30 20.0	.57982
26	19 34 56.14	23 41 48.4	.0703429	1 15.9	342 28 20.8	6 17 48.2	.57316
27	19 41 7.63	23 22 56.6	.0626714	1 18.2	346 50 33.9	6 2 43.8	.56637
28	19 47 9.08	23 2 48.1	.0545352	1 20.3	351 20 54.3	5 44 58.9	.55948
29	19 52 58.92	22 41 28.4	.0459157	1 22.1	355 59 40.5	5 24 26.6	.55255
30	19 58 35.37	22 19 4.3	.0367964	1 23.8	0 47 8.9	5 1 1.0	.54562
31	20 3 56.40	21 55 43.8	.0271636	1 25.2	5 43 32.4	4 34 38.5	.53874
32	20 8 59.79	S. 21 31 36.6	0.0170086	1 26.3	10 48 59.9	S. 4 5 18.1	9.53198

JANUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric,				Heliocentric,		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	16 24 38.68	S. 20 4 23.9	0.1141506	21 42.1	199 14 30.8	N. 2 48 39.6	9.8582919
2	16 29 48.28	20 18 9.4	.1160317	21 43.3	200 51 8.7	2 45 23.6	.8583702
3	16 34 58.93	20 31 21.6	.1178936	21 44.6	202 27 44.1	2 41 59.8	.8584492
4	16 40 10.60	20 43 59.8	.1197365	21 45.8	204 4 16.8	2 38 28.4	.8585289
5	16 45 23.24	20 56 3.4	.1215608	21 47.1	205 40 46.9	2 34 49.7	.8586091
6	16 50 36.83	21 7 31.9	.1233665	21 48.4	207 17 14.3	2 31 3.7	.8586898
7	16 55 51.33	21 18 24.6	.1251538	21 49.8	208 53 39.0	2 27 10.7	.8587710
8	17 1 6.70	21 28 41.2	.1269229	21 51.1	210 30 0.8	2 23 10.8	.8588526
9	17 6 22.89	21 38 20.9	.1286742	21 52.4	212 6 19.8	2 19 4.3	.8589345
10	17 11 39.86	21 47 23.4	.1304077	21 53.7	213 42 36.0	2 14 51.4	.8590168
11	17 16 57.58	21 55 48.1	.1321239	21 55.1	215 18 49.5	2 10 32.2	.8590993
12	17 22 15.98	22 3 34.8	.1338228	21 56.4	216 55 0.3	2 6 7.0	.8591819
13	17 27 35.04	22 10 42.8	.1355048	21 57.8	218 31 8.3	2 1 35.9	.8592645
14	17 32 54.70	22 17 11.9	.1371702	21 59.1	220 7 13.6	1 56 59.3	.8593472
15	17 38 14.92	22 23 1.7	.1388190	22 0.5	221 43 16.2	1 52 17.3	.8594298
16	17 43 35.64	22 28 11.9	.1404517	22 1.9	223 19 16.1	1 47 30.2	.8595124
17	17 48 56.81	22 32 42.2	.1420683	22 3.3	224 55 13.3	1 42 38.1	.8595948
18	17 54 18.39	22 36 32.4	.1436690	22 4.8	226 31 7.9	1 37 41.4	.8596770
19	17 59 40.32	22 39 42.2	.1452541	22 6.3	228 6 59.9	1 32 40.2	.8597588
20	18 5 2.55	22 42 11.4	.1468235	22 7.8	229 42 49.3	1 27 34.8	.8598403
21	18 10 25.01	22 43 59.9	.1483774	22 9.2	231 18 36.0	1 22 25.5	.8599213
22	18 15 47.66	22 45 7.5	.1499160	22 10.6	232 54 20.1	1 17 12.5	.8600018
23	18 21 10.45	22 45 34.0	.1514393	22 12.0	234 30 1.6	1 11 56.0	.8600818
24	18 26 33.31	22 45 19.4	.1529474	22 13.4	236 5 40.7	1 6 36.2	.8601612
25	18 31 56.19	22 44 23.6	.1544404	22 14.8	237 41 17.3	1 1 13.5	.8602400
26	18 37 19.04	22 42 46.6	.1559182	22 16.3	239 16 51.5	0 55 48.0	.8603180
27	18 42 41.79	22 40 28.4	.1573810	22 17.8	240 52 23.4	0 50 20.1	.8603952
28	18 48 4.39	22 37 29.0	.1588287	22 19.3	242 27 53.0	0 44 49.9	.8604715
29	18 53 26.79	22 33 48.5	.1602614	22 20.7	244 3 20.3	0 39 17.8	.8605469
30	18 58 48.93	22 29 27.0	.1616792	22 22.1	245 38 45.5	0 33 44.0	.8606214
31	19 4 10.75	22 24 24.5	.1630821	22 23.5	247 14 8.6	0 28 8.8	.8606948
32	19 9 32.19	S. 22 18 41.5	0.1644701	22 24.9	248 49 29.7	N. 0 22 32.4	9.8607671

FEBRUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. Rad.	
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.	
	<i>h m s</i>	<i>° ′ ″</i>		<i>h m</i>	<i>° ′ ″</i>	<i>° ′ ″</i>		
1	19 9 32.19	S. 22 18 41.5	0.1644701	22 24.9	248 49 29.7	N. 0 22 32.4	9.8601	
2	19 14 53.20	22 12 17.9	.1658434	22 26.3	250 24 48.8	0 16 55.0	.8601	
3	19 20 13.72	22 5 14.2	.1672020	22 27.7	252 0 6.0	0 11 17.0	.8601	
4	19 25 33.69	21 57 30.5	.1685461	22 29.0	253 35 21.3	N. 0 5 38.5	.8601	
5	19 30 53.07	21 49 7.1	.1698757	22 30.4	255 10 34.7	S. 0 0 0.1	.8611	
6	19 36 11.80	21 40 4.3	.1711909	22 31.8	256 45 46.2	0 5 38.6	.8611	
7	19 41 29.84	21 30 22.5	.1724919	22 33.1	258 20 56.0	0 11 16.7	.8611	
8	19 46 47.14	21 20 2.0	.1737789	22 34.4	259 56 4.2	0 16 54.2	.8611	
9	19 52 3.66	21 9 3.2	.1750519	22 35.8	261 31 10.9	0 22 30.9	.8611	
10	19 57 19.37	20 57 26.7	.1763113	22 37.1	263 6 16.1	0 28 6.4	.8611	
11	20 2 34.22	20 45 12.8	.1775571	22 38.4	264 41 19.9	0 33 40.5	.8611	
12	20 7 48.18	20 32 22.1	.1787896	22 39.7	266 16 22.3	0 39 13.0	.8611	
13	20 13 1.22	20 18 55.0	.1800088	22 41.0	267 51 23.4	0 44 43.6	.8611	
14	20 18 13.31	20 4 52.0	.1812149	22 42.2	269 26 23.4	0 50 12.0	.8611	
15	20 23 24.43	19 50 13.7	.1824081	22 43.4	271 1 22.4	0 55 38.1	.8611	
16	20 28 34.55	19 35 0.6	.1835885	22 44.6	272 36 20.4	1 1 1.6	.8611	
17	20 33 43.65	19 19 13.4	.1847561	22 45.8	274 11 17.3	1 6 22.3	.8611	
18	20 38 51.70	19 2 52.4	.1859111	22 47.0	275 46 13.3	1 11 39.8	.8611	
19	20 43 58.70	18 45 58.4	.1870536	22 48.2	277 21 8.4	1 16 53.9	.8611	
20	20 49 4.62	18 28 31.9	.1881835	22 49.3	278 56 2.8	1 22 4.5	.8611	
21	20 54 9.47	18 10 33.5	.1893010	22 50.4	280 30 56.4	1 27 11.3	.8611	
22	20 59 13.22	17 52 3.9	.1904061	22 51.5	282 5 49.4	1 32 14.1	.8611	
23	21 4 15.88	17 33 3.7	.1914988	22 52.6	283 40 41.9	1 37 12.6	.8611	
24	21 9 17.43	17 13 33.6	.1925789	22 53.7	285 15 33.9	1 42 6.5	.8621	
25	21 14 17.88	16 53 34.1	.1936466	22 54.8	286 50 25.6	1 46 55.8	.8621	
26	21 19 17.23	16 33 6.0	.1947017	22 55.8	288 25 16.9	1 51 40.1	.8621	
27	21 24 15.48	16 12 9.9	.1957442	22 56.8	290 0 8.0	1 56 19.3	.8621	
28	21 29 12.63	15 50 46.5	.1967741	22 57.8	291 34 58.9	2 0 53.2	.8621	
29	21 34 8.67	S. 15 28 56.5	0.1977915	22 58.8	293 9 49.7	S. 2 5 21.5	9.8621	

MARCH, 1837.

MEAN TIME.

Geocentric.				Heliocentric.		
Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
21 34 8.67	S. 15 28 56.5	0.1977915	22 58.8	293 9 49.7	S. 2 5 21.5	9.8621618
21 39 3.63	15 6 40.7	.1987962	22 59.7	294 44 40.4	2 9 44.1	.8621837
21 43 57.50	14 43 59.8	.1997884	23 0.6	296 19 31.1	2 14 0.8	.8622035
21 48 50.28	14 20 54.4	.2007679	23 1.5	297 54 21.9	2 18 11.3	.8622210
21 53 41.99	13 57 25.4	.2017349	23 2.4	299 29 12.7	2 22 15.5	.8622362
21 58 32.64	13 33 33.4	.2026892	23 3.3	301 4 3.7	2 26 13.1	.8622492
22 3 22.25	13 9 19.2	.2036309	23 4.2	302 38 54.9	2 30 4.1	.8622600
22 8 10.82	12 44 43.5	.2045600	23 5.0	304 13 46.4	2 33 48.3	.8622685
22 12 58.39	12 19 47.0	.2054768	23 5.9	305 48 38.2	2 37 25.4	.8622748
22 17 44.97	11 54 30.6	.2063812	23 6.7	307 23 30.4	2 40 55.3	.8622788
22 22 30.59	11 28 54.9	.2072734	23 7.5	308 58 23.1	2 44 17.8	.8622805
22 27 15.26	11 3 0.7	.2081535	23 8.3	310 33 16.4	2 47 32.9	.8622800
22 31 59.01	10 36 48.7	.2090215	23 9.1	312 8 10.3	2 50 40.3	.8622773
22 36 41.87	10 10 19.7	.2098775	23 9.8	313 43 4.8	2 53 40.0	.8622723
22 41 23.86	9 43 34.4	.2107216	23 10.6	315 18 0.0	2 56 31.7	.8622650
22 46 5.02	9 16 33.5	.2115538	23 11.3	316 52 55.8	2 59 15.4	.8622555
22 50 45.37	8 49 17.7	.2123742	23 12.0	318 27 52.4	3 1 50.9	.8622437
22 55 24.95	8 21 47.8	.2131829	23 12.7	320 2 49.7	3 4 18.1	.8622297
23 0 3.79	7 54 4.5	.2139798	23 13.4	321 37 47.8	3 6 36.9	.8622135
23 4 41.93	7 26 8.4	.2147651	23 14.1	323 12 46.8	3 8 47.1	.8621951
23 9 19.40	6 58 0.3	.2155387	23 14.8	324 47 46.6	3 10 48.8	.8621745
23 13 56.25	6 29 41.0	.2163006	23 15.5	326 22 47.2	3 12 41.7	.8621517
23 18 32.50	6 1 11.1	.2170509	23 16.2	327 57 48.8	3 14 25.8	.8621267
23 23 8.20	5 32 31.3	.2177895	23 16.8	329 32 51.5	3 16 1.1	.8620996
23 27 43.38	5 3 42.3	.2185163	23 17.5	331 7 55.3	3 17 27.4	.8620704
23 32 18.09	4 34 44.8	.2192312	23 18.1	332 43 0.2	3 18 44.6	.8620390
23 36 52.37	4 5 39.5	.2199341	23 18.7	334 18 6.2	3 19 52.8	.8620055
23 41 26.25	3 36 27.1	.2206250	23 19.3	335 53 13.3	3 20 51.8	.8619700
23 45 59.77	3 7 8.4	.2213037	23 19.9	337 28 21.6	3 21 41.6	.8619325
23 50 32.97	2 37 44.0	.2219701	23 20.5	339 3 31.0	3 22 22.2	.8618929
23 55 5.89	2 8 14.7	.2226243	23 21.1	340 38 41.6	3 22 53.5	.8618514
23 59 38.57	S. 1 38 41.2	0.2232661	23 21.7	342 13 53.3	S. 3 23 15.5	9.8618079

APRIL, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	23 59 38.57	S. 1 38 41.2	0.2232661	23 21.7	342 13 53.3	S. 3 23 15.5	9.8618079
2	0 4 11.04	1 9 4.2	.2238954	23 22.2	343 49 6.1	3 23 28.2	.8617626
3	0 8 43.34	0 39 24.5	.2245123	23 22.8	345 24 20.2	3 23 31.5	.8617154
4	0 13 15.51	S. 0 9 42.8	.2251166	23 23.4	346 59 35.6	3 23 25.5	.8616663
5	0 17 47.59	N. 0 20 0.3	.2257084	23 24.0	348 34 52.3	3 23 10.1	.8616154
6	0 22 19.62	0 49 43.9	.2262875	23 24.6	350 10 10.3	3 22 45.4	.8615627
7	0 26 51.64	1 19 27.3	.2268540	23 25.2	351 45 29.6	3 22 11.3	.8615083
8	0 31 23.70	1 49 9.9	.2274079	23 25.8	353 20 50.3	3 21 27.9	.8614522
9	0 35 55.83	2 18 50.9	.2279491	23 26.4	354 56 12.3	3 20 35.3	.8613945
10	0 40 28.07	2 48 29.6	.2284778	23 27.0	356 31 35.8	3 19 33.4	.8613352
11	0 45 0.45	3 18 5.3	.2289940	23 27.7	358 7 0.6	3 18 22.2	.8612744
12	0 49 33.02	3 47 37.3	.2294977	23 28.3	359 42 26.9	3 17 1.9	.8612119
13	0 54 5.82	4 17 4.8	.2299890	23 28.9	1 17 54.5	3 15 32.5	.8611480
14	0 58 38.89	4 46 27.1	.2304679	23 29.5	2 53 23.4	3 13 54.0	.8610827
15	1 3 12.27	5 15 43.6	.2309343	23 30.2	4 28 53.6	3 12 6.5	.8610161
16	1 7 46.00	5 44 53.5	.2313883	23 30.8	6 4 25.4	3 10 10.1	.8609481
17	1 12 20.13	6 13 56.1	.2318299	23 31.4	7 39 58.6	3 8 4.9	.8608787
18	1 16 54.69	6 42 50.7	.2322591	23 32.0	9 15 33.2	3 5 50.9	.8608082
19	1 21 29.72	7 11 36.6	.2326759	23 32.7	10 51 9.3	3 3 28.3	.8607365
20	1 26 5.27	7 40 13.1	.2330803	23 33.3	12 26 46.9	3 0 57.1	.8606637
21	1 30 41.37	8 8 39.5	.2334721	23 34.0	14 2 25.9	2 58 17.5	.8605898
22	1 35 18.06	8 36 55.1	.2338514	23 34.6	15 38 6.5	2 55 29.6	.8605150
23	1 39 55.38	9 4 59.2	.2342182	23 35.3	17 13 48.6	2 52 33.5	.8604392
24	1 44 33.38	9 32 51.2	.2345723	23 36.0	18 49 32.3	2 49 29.2	.8603626
25	1 49 12.08	10 0 30.2	.2349135	23 36.8	20 25 17.6	2 46 17.1	.8602851
26	1 53 51.52	10 27 55.5	.2352418	23 37.5	22 1 4.3	2 42 57.2	.8602069
27	1 58 31.73	10 55 6.5	.2355570	23 38.2	23 36 52.5	2 39 29.6	.8601279
28	2 3 12.74	11 22 2.3	.2358591	23 38.9	25 12 42.1	2 35 54.5	.8600484
29	2 7 54.57	11 48 42.2	.2361478	23 39.7	26 48 33.3	2 32 12.0	.8599682
30	2 12 37.27	12 15 5.4	.2364232	23 40.5	28 24 26.0	2 28 22.4	.8598874
31	2 17 20.86	N. 12 41 11.3	0.2366850	23 41.3	30 0 20.3	S. 2 24 25.8	9.8598062

MAY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	2 17 20.86	N. 12 41 11.3	0.2366850	23 41.3	30 0 20.3	S. 2 24 25.8	9.8598062
2	2 22 5.37	13 6 59.1	.2369333	23 42.1	31 36 16.3	2 20 22.3	.8597246
3	2 26 50.83	13 32 28.0	.2371678	23 43.0	33 12 14.0	2 16 12.2	.8596427
4	2 31 37.25	13 57 37.3	.2373886	23 43.8	34 48 13.2	2 11 55.7	.8595605
5	2 36 24.68	14 22 26.2	.2375956	23 44.7	36 24 14.1	2 7 32.9	.8594781
6	2 41 13.11	14 46 54.0	.2377887	23 45.6	38 0 16.8	2 3 4.0	.8593955
7	2 46 2.57	15 10 59.9	.2379679	23 46.5	39 36 21.1	1 58 29.3	.8593129
8	2 50 53.07	15 34 43.3	.2381332	23 47.4	41 12 27.1	1 53 48.9	.8592302
9	2 55 44.63	15 58 3.2	.2382845	23 48.3	42 48 34.7	1 49 3.0	.8591476
10	3 0 37.26	16 20 59.0	.2384219	23 49.2	44 24 44.1	1 44 11.9	.8590651
11	3 5 30.97	16 43 30.0	.2385453	23 50.2	46 0 55.1	1 39 15.9	.8589828
12	3 10 25.77	17 5 35.4	.2386549	23 51.2	47 37 7.7	1 34 15.1	.8589007
13	3 15 21.67	17 27 14.5	.2387505	23 52.2	49 13 22.0	1 29 9.7	.8588190
14	3 20 18.68	17 48 26.5	.2388324	23 53.3	50 49 38.0	1 24 0.0	.8587376
15	3 25 16.81	18 9 10.8	.2389004	23 54.3	52 25 55.7	1 18 46.3	.8586567
16	3 30 16.05	18 29 26.6	.2389546	23 55.3	54 2 15.2	1 13 28.7	.8585763
17	3 35 16.43	18 49 13.3	.2389950	23 56.4	55 38 36.4	1 8 7.5	.8584964
18	3 40 17.94	19 8 30.2	.2390215	23 57.5	57 14 59.3	1 2 43.0	.8584172
19	3 45 20.57	19 27 16.6	.2390340	23 58.7	58 51 24.1	0 57 15.5	.8583386
20	3 50 24.32	19 45 31.9	.2390326	23 59.9	60 27 50.8	0 51 45.1	.8582608
21	3 55 29.19	20 3 15.3	.2390173	* *	62 4 19.3	0 46 12.1	.8581838
22	4 0 35.17	20 20 26.3	.2389880	0 1.0	63 40 49.6	0 40 36.9	.8581076
23	4 5 42.23	20 37 4.1	.2389446	0 2.2	65 17 21.7	0 34 59.6	.8580324
24	4 10 50.38	20 53 8.2	.2388870	0 3.4	66 53 55.6	0 29 20.5	.8579583
25	4 15 59.59	21 8 37.9	.2388151	0 4.6	68 30 31.2	0 23 39.9	.8578852
26	4 21 9.84	21 23 32.6	.2387288	0 5.9	70 7 8.6	0 17 58.1	.8578132
27	4 26 21.10	21 37 51.7	.2386280	0 7.1	71 43 47.8	0 12 15.4	.8577424
28	4 31 33.36	21 51 34.7	.2385126	0 8.4	73 20 28.7	0 6 32.0	.8576728
29	4 36 46.57	22 4 40.8	.2383825	0 9.6	74 57 11.4	S. 0 0 48.1	.8576044
30	4 42 0.72	22 17 9.6	.2382376	0 10.9	76 33 56.0	N. 0 4 55.9	.8575374
31	4 47 15.78	22 29 0.6	.2380777	0 12.2	78 10 42.4	0 10 39.8	.8574719
32	4 52 31.69	N. 22 40 13.2	0.2379028	0 13.5	79 47 30.6	N. 0 16 23.3	9.8574079

JUNE, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	^h 4 ^m 52 ^s 31.69	N. 22 40 13.2	0.2379028	^h 0 13.5	^o 79 47 30.6	N. 0 16 23.3	9.8574079
2	4 57 48.44	22 50 46.9	.2377127	0 14.8	81 24 20.7	0 22 6.1	.8573433
3	5 3 5.97	23 0 41.4	.2375074	0 16.1	83 1 12.6	0 27 48.0	.8572843
4	5 8 24.23	23 9 56.1	.2372869	0 17.5	84 38 6.3	0 33 28.6	.8572248
5	5 13 43.17	23 18 30.6	.2370510	0 18.9	86 15 1.8	0 39 7.7	.8571670
6	5 19 2.75	23 26 24.6	.2367999	0 20.3	87 51 59.0	0 44 45.1	.8571109
7	5 24 22.91	23 33 37.6	.2365334	0 21.7	89 28 57.9	0 50 20.4	.8570567
8	5 29 43.59	23 40 9.4	.2362516	0 23.1	91 5 58.4	0 55 53.3	.8570042
9	5 35 4.75	23 45 59.6	.2359546	0 24.5	92 43 0.6	1 1 23.7	.8569533
10	5 40 26.32	23 51 7.9	.2356422	0 25.9	94 20 4.5	1 6 51.2	.8569046
11	5 45 48.26	23 55 34.1	.2353147	0 27.4	95 57 9.9	1 12 15.6	.8568577
12	5 51 10.52	23 59 18.0	.2349720	0 28.8	97 34 16.9	1 17 36.6	.8568128
13	5 56 33.03	24 2 19.4	.2346141	0 30.2	99 11 25.5	1 22 54.0	.8567699
14	6 1 55.72	24 4 38.1	.2342411	0 31.7	100 48 35.7	1 28 7.4	.8567290
15	6 7 18.56	24 6 14.0	.2338530	0 33.1	102 25 47.4	1 33 16.7	.8566902
16	6 12 41.47	24 7 7.1	.2334498	0 34.5	104 3 0.7	1 38 21.6	.8566535
17	6 18 4.40	24 7 17.3	.2330315	0 35.9	105 40 15.4	1 43 21.8	.8566189
18	6 23 27.29	24 6 44.6	.2325981	0 37.4	107 17 31.6	1 48 17.0	.8565865
19	6 28 50.09	24 5 29.0	.2321497	0 38.8	108 54 49.2	1 53 7.1	.8565562
20	6 34 12.73	24 3 30.4	.2316863	0 40.3	110 32 8.2	1 57 51.8	.8565281
21	6 39 35.15	24 0 49.0	.2312077	0 41.7	112 9 28.4	2 2 30.9	.8565023
22	6 44 57.30	23 57 24.9	.2307140	0 43.2	113 46 49.8	2 7 4.2	.8564787
23	6 50 19.12	23 53 18.1	.2302051	0 44.6	115 24 12.3	2 11 31.4	.8564574
24	6 55 40.55	23 48 28.8	.2296809	0 46.0	117 1 35.7	2 15 52.2	.8564384
25	7 1 1.54	23 42 57.2	.2291413	0 47.4	118 39 0.2	2 20 6.6	.8564216
26	7 6 22.03	23 36 43.4	.2285862	0 48.8	120 16 25.8	2 24 14.2	.8564071
27	7 11 41.98	23 29 47.7	.2280156	0 50.2	121 53 52.3	2 28 14.9	.8563950
28	7 17 1.32	23 22 10.5	.2274293	0 51.5	123 31 19.8	2 32 8.4	.8563853
29	7 22 20.01	23 13 51.9	.2268273	0 52.9	125 8 48.2	2 35 54.7	.8563779
30	7 27 38.00	23 4 52.4	.2262094	0 54.3	126 46 17.3	2 39 33.4	.8563729
31	7 32 55.24	N. 22 55 12.3	0.2255756	0 55.6	128 23 47.1	N. 2 43 4.4	9.8563702

JULY, 1837.

MEAN TIME.

Geocentric.				Heliocentric.		
Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
h m s	° ' "		h m	° ' "	° ' "	
32 55.24	N. 22 55 12.3	0.2255756	0 55.6	128 23 47.1	N. 2 43 4.4	9.8563702
38 11.67	22 44 51.9	.2249259	0 56.9	130 1 17.5	2 46 27.6	.8563699
43 27.25	22 33 51.8	.2242602	0 58.3	131 38 48.5	2 49 42.8	.8563719
48 41.93	22 22 12.2	.2235785	0 59.6	133 16 19.9	2 52 49.8	.8563763
53 55.67	22 9 53.7	.2228807	1 0.9	134 53 51.6	2 55 48.5	.8563831
59 8.43	21 56 56.8	.2221670	1 2.2	136 31 23.5	2 58 38.7	.8563922
4 20.17	21 43 21.9	.2214372	1 3.5	138 8 55.6	3 1 20.2	.8564037
9 30.86	21 29 9.6	.2206915	1 4.7	139 46 27.8	3 3 53.0	.8564175
14 40.47	21 14 20.5	.2199298	1 5.9	141 24 0.1	3 6 16.9	.8564336
19 48.97	20 58 55.1	.2191523	1 7.1	143 1 32.4	3 8 31.9	.8564521
24 56.34	20 42 54.0	.2183589	1 8.3	144 39 4.5	3 10 37.8	.8564729
30 2.55	20 26 17.7	.2175497	1 9.4	146 16 36.3	3 12 34.4	.8564959
35 7.58	20 9 7.0	.2167247	1 10.6	147 54 7.9	3 14 21.7	.8565211
40 11.42	19 51 22.3	.2158841	1 11.7	149 31 39.2	3 15 59.7	.8565486
45 14.05	19 33 4.5	.2150279	1 12.8	151 9 10.2	3 17 28.3	.8565783
50 15.47	19 14 14.0	.2141562	1 13.9	152 46 40.6	3 18 47.3	.8566102
55 15.66	18 54 51.6	.2132690	1 15.0	154 24 10.3	3 19 56.7	.8566443
0 14.62	18 34 58.0	.2123665	1 16.0	156 1 39.3	3 20 56.5	.8566805
5 12.34	18 14 33.7	.2114484	1 17.0	157 39 7.3	3 21 46.6	.8567187
10 8.83	17 53 39.5	.2105150	1 18.0	159 16 34.4	3 22 27.0	.8567590
15 4.08	17 32 16.1	.2095661	1 19.0	160 54 0.5	3 22 57.6	.8568014
19 58.10	17 10 24.0	.2086018	1 19.9	162 31 25.4	3 23 18.5	.8568459
24 50.90	16 48 4.1	.2076219	1 20.9	164 8 49.2	3 23 29.6	.8568923
29 42.48	16 25 17.0	.2066265	1 21.8	165 46 11.7	3 23 31.0	.8569406
34 32.87	16 2 3.4	.2056154	1 22.6	167 23 33.0	3 23 22.6	.8569909
39 22.06	15 38 24.0	.2045887	1 23.5	169 0 52.9	3 23 4.4	.8570430
44 10.09	15 14 19.5	.2035461	1 24.3	170 38 11.3	3 22 36.5	.8570969
48 56.94	14 49 50.7	.2024877	1 25.2	172 15 28.1	3 21 58.8	.8571525
53 42.65	14 24 58.2	.2014134	1 26.0	173 52 43.3	3 21 11.5	.8572098
58 27.23	13 59 42.9	.2003230	1 26.8	175 29 56.7	3 20 14.6	.8572688
3 10.69	13 34 5.4	.1992166	1 27.6	177 7 8.4	3 19 8.1	.8573295
7 53.05	N. 13 8 6.5	0.1980941	1 28.4	178 44 18.2	N. 3 17 52.1	9.8573917

AUGUST, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	10 7 53.05	N. 13 8 6.5	0.1980941	1 28.4	178 44 18.2	N. 3 17 52.1	9.8577
2	10 12 34.33	12 41 46.9	.1969554	1 29.2	180 21 25.9	3 16 26.7	.8577
3	10 17 14.56	12 15 7.4	.1958006	1 29.9	181 58 31.5	3 14 51.9	.8577
4	10 21 53.76	11 48 8.7	.1946296	1 30.6	183 35 35.0	3 13 7.8	.8577
5	10 26 31.95	11 20 51.6	.1934423	1 31.3	185 12 36.4	3 11 14.6	.8577
6	10 31 9.16	10 53 16.8	.1922388	1 32.0	186 49 35.6	3 9 12.3	.8577
7	10 35 45.42	10 25 25.0	.1910191	1 32.6	188 26 32.5	3 7 1.0	.8577
8	10 40 20.77	9 57 17.1	.1897833	1 33.3	190 3 27.1	3 4 40.9	.8577
9	10 44 55.22	9 28 53.6	.1885315	1 33.9	191 40 19.4	3 2 12.0	.8577
10	10 49 28.82	9 0 15.4	.1872636	1 34.5	193 17 9.3	2 59 34.5	.858
11	10 54 1.60	8 31 23.1	.1859797	1 35.1	194 53 56.8	2 56 48.5	.858
12	10 58 33.58	8 2 17.6	.1846800	1 35.7	196 30 41.9	2 53 54.2	.858
13	11 3 4.81	7 32 59.5	.1833645	1 36.3	198 7 24.4	2 50 51.8	.858
14	11 7 35.31	7 3 29.7	.1820334	1 36.9	199 44 4.2	2 47 41.3	.858
15	11 12 5.12	6 33 48.7	.1806866	1 37.4	201 20 41.4	2 44 22.9	.858
16	11 16 34.30	6 3 57.4	.1793242	1 37.9	202 57 15.8	2 40 56.8	.858
17	11 21 2.86	5 33 56.3	.1779462	1 38.4	204 33 47.5	2 37 23.2	.858
18	11 25 30.87	5 3 46.2	.1765526	1 39.0	206 10 16.5	2 33 42.3	.858
19	11 29 58.36	4 33 27.7	.1751434	1 39.5	207 46 42.7	2 29 54.2	.858
20	11 34 25.37	4 3 1.6	.1737186	1 40.0	209 23 6.4	2 25 59.1	.858
21	11 38 51.94	3 32 28.5	.1722781	1 40.5	210 59 27.3	2 21 57.2	.858
22	11 43 18.12	3 1 49.2	.1708219	1 41.0	212 35 45.4	2 17 48.7	.858
23	11 47 43.96	2 31 4.2	.1693498	1 41.5	214 12 0.8	2 13 33.8	.859
24	11 52 9.49	2 0 14.4	.1678618	1 42.0	215 48 13.5	2 9 12.8	.859
25	11 56 34.76	1 29 20.4	.1663578	1 42.5	217 24 23.5	2 4 45.8	.859
26	12 0 59.81	0 58 22.8	.1648377	1 43.0	219 0 30.8	2 0 13.1	.859
27	12 5 24.67	N. 0 27 22.4	.1633013	1 43.4	220 36 35.4	1 55 34.8	.859
28	12 9 49.39	S. 0 3 40.0	.1617486	1 43.9	222 12 37.1	1 50 51.2	.859
29	12 14 14.02	0 34 43.9	.1601795	1 44.3	223 48 36.1	1 46 2.6	.859
30	12 18 38.58	1 5 48.4	.1585938	1 44.7	225 24 32.5	1 41 9.1	.859
31	12 23 3.12	1 36 52.8	.1569914	1 45.2	227 0 26.1	1 36 11.0	.859
32	12 27 27.68	S. 2 7 56.5	0.1553722	1 45.7	228 36 17.0	N. 1 31 8.6	9.8597

SEPTEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	12 27 27.68 S.	2 7 56.5	0.1553722	1 45.7	228 36 17.0	N. 1 31 8.6	9.8597861
2	12 31 52.30	2 38 58.6	.1537363	1 46.2	230 12 5.2	1 26 2.0	.8598674
3	12 36 17.02	3 9 58.6	.1520835	1 46.7	231 47 51.0	1 20 51.5	.8599482
4	12 40 41.89	3 40 55.6	.1504138	1 47.1	233 23 34.2	1 15 37.3	.8600286
5	12 45 6.94	4 11 48.9	.1487271	1 47.6	234 59 14.9	1 10 19.8	.8601085
6	12 49 32.21	4 42 37.9	.1470235	1 48.1	236 34 53.1	1 4 59.1	.8601877
7	12 53 57.75	5 13 21.8	.1453027	1 48.6	238 10 29.1	0 59 35.5	.8602661
8	12 58 23.58	5 43 59.8	.1435650	1 49.1	239 46 2.7	0 54 9.3	.8603437
9	13 2 49.76	6 14 31.3	.1418103	1 49.6	241 21 34.1	0 48 40.7	.8604206
10	13 7 16.31	6 44 55.5	.1400387	1 50.1	242 57 3.2	0 43 10.0	.8604966
11	13 11 43.27	7 15 11.8	.1382503	1 50.6	244 32 29.9	0 37 37.4	.8605718
12	13 16 10.69	7 45 19.3	.1364451	1 51.1	246 7 54.3	0 32 3.1	.8606459
13	13 20 38.60	8 15 17.4	.1346230	1 51.6	247 43 16.7	0 26 27.4	.8607189
14	13 25 7.04	8 45 5.3	.1327840	1 52.1	249 18 37.0	0 20 50.7	.8607908
15	13 29 36.06	9 14 42.3	.1309280	1 52.7	250 53 55.2	0 15 13.1	.8608615
16	13 34 5.70	9 44 7.6	.1290551	1 53.2	252 29 11.5	0 9 34.9	.8609311
17	13 38 35.98	10 13 20.7	.1271651	1 53.8	254 4 26.0	N. 0 3 56.4	.8609995
18	13 43 6.96	10 42 20.8	.1252581	1 54.4	255 39 38.8	S. 0 1 42.2	.8610665
19	13 47 38.66	11 11 7.3	.1233340	1 55.0	257 14 49.8	0 7 20.6	.8611322
20	13 52 11.13	11 39 39.3	.1213926	1 55.6	258 49 59.2	0 12 58.6	.8611964
21	13 56 44.40	12 7 56.3	.1194339	1 56.2	260 25 7.1	0 18 35.9	.8612592
22	14 1 18.49	12 35 57.4	.1174577	1 56.8	262 0 13.5	0 24 12.2	.8613203
23	14 5 53.45	13 3 41.9	.1154638	1 57.4	263 35 18.4	0 29 47.3	.8613800
24	14 10 29.30	13 31 9.1	.1134520	1 58.1	265 10 21.8	0 35 21.0	.8614381
25	14 15 6.08	13 58 18.2	.1114222	1 58.8	266 45 23.9	0 40 52.9	.8614946
26	14 19 43.79	14 25 8.4	.1093740	1 59.5	268 20 24.7	0 46 22.9	.8615495
27	14 24 22.47	14 51 39.1	.1073072	2 0.2	269 55 24.2	0 51 50.7	.8616025
28	14 29 2.16	15 17 49.4	.1052217	2 0.9	271 30 22.6	0 57 16.1	.8616538
29	14 33 42.85	15 43 38.5	.1031172	2 1.6	273 5 20.1	1 2 38.7	.8617033
30	14 38 24.59	16 9 5.8	.1009936	2 2.4	274 40 16.6	1 7 58.4	.8617510
31	14 43 7.38 S.	16 34 10.4	0.0988506	2 3.2	276 15 12.3	S. 1 13 15.0	9.8617968

OCTOBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log Rad.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	14 43 7.38	S. 16 34 10.4	0.0988506	2 3.2	276 15 12.3	S. 1 13 15.0	9.8617
2	14 47 51.23	16 58 51.5	.0966881	2 4.0	277 50 7.1	1 18 28.1	.8618
3	14 52 36.16	17 23 8.4	.0945060	2 4.8	279 25 1.2	1 23 37.5	.8618
4	14 57 22.18	17 47 0.4	.0923039	2 5.6	280 59 54.7	1 28 43.1	.8619
5	15 2 9.29	18 10 26.7	.0900819	2 6.4	282 34 47.8	1 33 44.6	.8619
6	15 6 57.50	18 33 26.5	.0878398	2 7.3	284 9 40.4	1 38 41.7	.8619
7	15 11 46.81	18 55 59.0	.0855776	2 8.2	285 44 32.4	1 43 34.3	.8620
8	15 16 37.22	19 18 3.6	.0832950	2 9.1	287 19 24.0	1 48 22.1	.8620
9	15 21 28.73	19 39 39.5	.0809920	2 10.0	288 54 15.3	1 53 5.0	.8620
10	15 26 21.33	20 0 45.9	.0786685	2 11.0	290 29 6.3	1 57 42.6	.8621
11	15 31 15.03	20 21 22.1	.0763245	2 11.9	292 3 57.0	2 2 14.8	.8621
12	15 36 9.82	20 41 27.5	.0739599	2 12.9	293 38 47.6	2 6 41.4	.8621
13	15 41 5.69	21 1 1.3	.0715747	2 13.9	295 13 38.2	2 11 2.2	.8621
14	15 46 2.63	21 20 2.9	.0691687	2 14.9	296 48 28.8	2 15 17.0	.8621
15	15 51 0.62	21 38 31.6	.0667417	2 15.9	298 23 19.5	2 19 25.6	.8621
16	15 55 59.67	21 56 26.8	.0642937	2 16.9	299 58 10.4	2 23 27.9	.8621
17	16 0 59.75	22 13 47.8	.0618244	2 18.0	301 33 1.7	2 27 23.6	.8621
18	16 6 0.83	22 30 34.0	.0593336	2 19.1	303 7 53.2	2 31 12.5	.8621
19	16 11 2.90	22 46 44.8	.0568211	2 20.2	304 42 45.0	2 34 54.5	.8621
20	16 16 5.92	23 2 19.6	.0542868	2 21.3	306 17 37.2	2 38 29.5	.8621
21	16 21 9.87	23 17 17.8	.0517304	2 22.4	307 52 29.7	2 41 57.2	.8621
22	16 26 14.70	23 31 38.8	.0491516	2 23.6	309 27 22.7	2 45 17.6	.8621
23	16 31 20.40	23 45 22.0	.0465500	2 24.7	311 2 16.2	2 48 30.4	.8621
24	16 36 26.91	23 58 26.9	.0439253	2 25.9	312 37 10.3	2 51 35.5	.8621
25	16 41 34.20	24 10 53.0	.0412770	2 27.0	314 12 4.9	2 54 32.7	.8621
26	16 46 42.23	24 22 39.7	.0386048	2 28.2	315 47 0.2	2 57 22.0	.8621
27	16 51 50.93	24 33 46.7	.0359085	2 29.3	317 21 56.2	3 0 3.2	.8621
28	16 57 0.27	24 44 13.4	.0331876	2 30.5	318 56 53.0	3 2 36.2	.8621
29	17 2 10.19	24 53 59.4	.0304419	2 31.8	320 31 50.5	3 5 0.9	.8621
30	17 7 20.62	25 3 4.4	.0276710	2 33.1	322 6 48.9	3 7 17.1	.8621
31	17 12 31.50	25 11 27.9	.0248743	2 34.4	323 41 48.3	3 9 24.8	.8621
32	17 17 42.76	S. 25 19 9.7	0.0220518	2 35.6	325 16 48.6	S. 3 11 23.8	9.8621

NOVEMBER, 1837.

MEAN TIME.

Geocentric.				Heliocentric.		
Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
^h ^m ^s 17 42 76	[°] ['] ["] S. 25 19 9 7	⁰ ⁰ ⁰ 0 0220518	^h ^m 2 35 6	[°] ['] ["] 325 16 48 6	[°] ['] ["] S. 3 11 23 8	⁹ ⁸ ⁶ 9 8621645
22 54 34	25 26 9 3	0 0192027	2 36 9	326 51 49 9	3 13 14 1	8621409
28 6 17	25 32 26 6	0 0163269	2 38 1	328 26 52 1	3 14 55 6	8621152
33 18 17	25 38 1 3	0 0134240	2 39 4	330 1 55 4	3 16 28 1	8620873
38 30 26	25 42 53 1	0 0104938	2 40 6	331 36 59 8	3 17 51 7	8620573
43 42 38	25 47 1 9	0 0075358	2 41 8	333 12 5 1	3 19 6 2	8620252
48 54 44	25 50 27 6	0 0045500	2 43 0	334 47 11 4	3 20 11 6	8619910
54 6 37	25 53 10 0	0 0015363	2 44 3	336 22 18 8	3 21 7 9	8619548
59 18 09	25 55 9 1	9 9984943	2 45 5	337 57 27 4	3 21 54 9	8619165
4 29 53	25 56 24 8	9 9954241	2 46 8	339 32 37 1	3 22 32 7	8618763
9 40 61	25 56 57 2	9 9923252	2 48 1	341 7 48 0	3 23 1 2	8618341
14 51 26	25 56 46 4	9 9891973	2 49 4	342 43 0 2	3 23 20 4	8617899
20 1 39	25 55 52 3	9 9860402	2 50 6	344 18 13 7	3 23 30 2	8617438
25 10 95	25 54 15 2	9 9828534	2 51 8	345 53 28 5	3 23 30 7	8616959
30 19 85	25 51 55 1	9 9796367	2 53 0	347 28 44 6	3 23 21 9	8616462
35 28 02	25 48 52 3	9 9763898	2 54 2	349 4 2 0	3 23 3 7	8615947
40 35 38	25 45 6 9	9 9731123	2 55 4	350 39 28 7	3 22 36 1	8615414
45 41 86	25 40 39 3	9 9698039	2 56 6	352 14 40 7	3 21 59 2	8614864
50 47 39	25 35 29 7	9 9664640	2 57 7	353 50 1 9	3 21 13 0	8614297
55 51 89	25 29 38 4	9 9630922	2 58 8	355 25 24 5	3 20 17 5	8613713
0 55 29	25 23 5 7	9 9596886	2 59 9	357 0 48 4	3 19 12 8	8613113
5 57 54	25 15 51 9	9 9562509	3 0 9	358 36 13 7	3 17 58 9	8612498
10 58 55	25 7 57 5	9 9527802	3 1 9	0 11 40 3	3 16 35 8	8611869
15 58 27	24 59 22 9	9 9492753	3 2 9	1 47 8 3	3 15 3 6	8611224
20 56 63	24 50 8 5	9 9457356	3 3 8	3 22 37 7	3 13 22 4	8610566
25 53 56	24 40 14 8	9 9421603	3 4 8	4 58 8 7	3 11 32 2	8609895
30 49 00	24 29 42 3	9 9385490	3 5 7	6 33 41 2	3 9 33 2	8609211
35 42 87	24 18 31 7	9 9349009	3 6 7	8 9 15 1	3 7 25 3	8608514
40 35 12	24 6 43 4	9 9312156	3 7 6	9 44 50 5	3 5 8 7	8607804
45 25 67	23 54 18 2	9 9274924	3 8 6	11 20 27 5	3 2 43 5	8607083
50 14 46	S. 23 41 16 6	9 9237308	3 9 6	12 56 5 9	S. 3 0 9 8	9 8606352

DECEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log Rad.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	19 50 14.46	S. 23 41 16.6	9.9237308	3 9.6	12 56 5.9	S. 3 0 9.8	9.8600
2	19 55 1.44	23 27 39.3	9.9199301	3 10.6	14 31 45.6	2 57 27.6	8.8600
3	19 59 46.53	23 13 27.0	9.9160897	3 11.5	16 7 26.7	2 54 37.2	8.8600
4	20 4 29.69	22 58 40.3	9.9122090	3 12.3	17 43 9.4	2 51 38.6	8.8600
5	20 9 10.85	22 43 19.9	9.9082877	3 13.0	19 18 53.7	2 48 32.0	8.8600
6	20 13 49.98	22 27 26.6	9.9043253	3 13.7	20 54 39.4	2 45 17.5	8.8600
7	20 18 27.00	22 11 1.2	9.9003214	3 14.3	22 30 26.6	2 41 55.2	8.8600
8	20 23 1.89	21 54 4.5	8.8962755	3 14.9	24 6 15.4	2 38 25.3	8.8600
9	20 27 34.61	21 36 37.2	8.8921872	3 15.5	25 42 5.7	2 34 48.0	8.8600
10	20 32 5.09	21 18 40.2	8.8880558	3 16.1	27 17 57.7	2 31 3.4	8.8599
11	20 36 33.31	21 0 14.3	8.8838809	3 16.7	28 53 51.3	2 27 11.6	8.8599
12	20 40 59.22	20 41 20.3	8.8796618	3 17.2	30 29 46.5	2 23 12.9	8.8599
13	20 45 22.78	20 21 59.1	8.8753982	3 17.6	32 5 43.4	2 19 7.4	8.8599
14	20 49 43.97	20 2 11.4	8.8710897	3 18.0	33 41 42.0	2 14 55.3	8.8599
15	20 54 2.75	19 41 58.1	8.8667357	3 18.3	35 17 42.1	2 10 36.8	8.8599
16	20 58 19.09	19 21 20.1	8.8623359	3 18.6	36 53 43.7	2 6 12.1	8.8599
17	21 2 32.96	19 0 18.1	8.8578895	3 18.9	38 29 46.9	2 1 41.4	8.8599
18	21 6 44.32	18 38 53.1	8.8533958	3 19.2	40 5 51.8	1 57 4.9	8.8599
19	21 10 53.16	18 17 5.9	8.8488541	3 19.4	41 41 58.3	1 52 22.8	8.8599
20	21 14 59.43	17 54 57.4	8.8442637	3 19.5	43 18 6.5	1 47 35.4	8.8599
21	21 19 3.12	17 32 28.5	8.8396237	3 19.6	44 54 16.4	1 42 42.8	8.8599
22	21 23 4.19	17 9 39.9	8.8349335	3 19.7	46 30 28.0	1 37 45.3	8.8588
23	21 27 2.61	16 46 32.7	8.8301921	3 19.8	48 6 41.3	1 32 43.0	8.8588
24	21 30 58.36	16 23 7.6	8.8253989	3 19.7	49 42 56.3	1 27 36.3	8.8588
25	21 34 51.38	15 59 25.6	8.8205528	3 19.6	51 19 13.1	1 22 25.3	8.8588
26	21 38 41.64	15 35 27.7	8.8156531	3 19.5	52 55 31.7	1 17 10.4	8.8588
27	21 42 29.11	15 11 14.7	8.8106989	3 19.4	54 31 52.1	1 11 51.7	8.8588
28	21 46 13.73	14 46 47.7	8.8056894	3 19.2	56 8 14.2	1 6 29.5	8.8588
29	21 49 55.45	14 22 7.7	8.8006237	3 18.9	57 44 38.0	1 1 4.0	8.8588
30	21 53 34.22	13 57 15.6	7.7955012	3 18.6	59 21 3.6	0 55 35.5	8.8588
31	21 57 10.01	13 32 12.5	7.7903212	3 18.3	60 57 30.9	0 50 4.3	8.8588
32	22 0 42.75	S. 13 6 59.3	9.7850830	3 18.0	62 33 59.9	S. 0 44 30.6	9.8588

JANUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	10 1 27.02	N. 16 0 6.2	9.9016532	15 15.1	121 20 50.4	N. 1 46 18.5	0.2150197
2	10 1 14.83	16 3 42.3	.8981938	15 10.9	121 47 50.7	1 46 33.5	.2152000
3	10 0 59.44	16 7 34.7	.8947721	15 6.7	122 14 49.7	1 46 48.2	.2153780
4	10 0 40.83	16 11 43.2	.8913919	15 2.4	122 41 47.4	1 47 2.4	.2155535
5	10 0 19.00	16 16 7.7	.8880572	14 58.1	123 8 43.8	1 47 16.2	.2157266
6	9 59 53.92	16 20 48.1	.8847718	14 53.7	123 35 39.0	1 47 29.7	.2158973
7	9 59 25.59	16 25 44.1	.8815396	14 49.3	124 2 32.9	1 47 42.7	.2160656
8	9 58 54.01	16 30 55.4	.8783646	14 44.8	124 29 25.5	1 47 55.2	.2162315
9	9 58 19.18	16 36 21.6	.8752509	14 40.3	124 56 16.9	1 48 7.4	.2163949
10	9 57 41.11	16 42 2.4	.8722028	14 35.7	125 23 7.1	1 48 19.1	.2165559
11	9 56 59.82	16 47 57.3	.8692242	14 31.0	125 49 56.0	1 48 30.4	.2167144
12	9 56 15.35	16 54 5.9	.8663191	14 26.3	126 16 43.7	1 48 41.4	.2168705
13	9 55 27.71	17 0 27.7	.8634919	14 21.6	126 43 30.2	1 48 52.0	.2170242
14	9 54 36.96	17 7 2.1	.8607467	14 16.8	127 10 15.7	1 49 2.3	.2171754
15	9 53 43.12	17 13 48.5	.8580874	14 11.9	127 37 0.1	1 49 12.1	.2173242
16	9 52 46.25	17 20 46.1	.8555181	14 7.0	128 3 43.4	1 49 21.5	.2174705
17	9 51 46.41	17 27 54.2	.8530427	14 2.1	128 30 25.7	1 49 30.4	.2176144
18	9 50 43.65	17 35 12.0	.8506652	13 57.1	128 57 7.0	1 49 38.8	.2177558
19	9 49 38.03	17 42 38.8	.8483897	13 52.0	129 23 47.3	1 49 46.9	.2178947
20	9 48 29.63	17 50 14.0	.8462199	13 46.9	129 50 26.6	1 49 54.6	.2180311
21	9 47 18.53	17 57 56.6	.8441597	13 41.8	130 17 4.8	1 50 1.9	.2181650
22	9 46 4.82	18 5 46.0	.8422128	13 36.6	130 43 42.1	1 50 8.8	.2182965
23	9 44 48.60	18 13 41.2	.8403830	13 31.4	131 10 18.4	1 50 15.4	.2184256
24	9 43 29.97	18 21 41.1	.8386739	13 26.1	131 36 53.7	1 50 21.6	.2185522
25	9 42 9.03	18 29 44.9	.8370890	13 20.8	132 3 28.1	1 50 27.4	.2186763
26	9 40 45.90	18 37 51.5	.8356313	13 15.5	132 30 1.7	1 50 32.8	.2187978
27	9 39 20.71	18 45 59.9	.8343041	13 10.2	132 56 34.4	1 50 37.7	.2189168
28	9 37 53.60	18 54 9.0	.8331102	13 4.8	133 23 6.1	1 50 42.2	.2190333
29	9 36 24.71	19 2 18.0	.8320525	12 59.4	133 49 36.9	1 50 46.3	.2191471
30	9 34 54.18	19 10 25.7	.8311336	12 53.9	134 16 7.0	1 50 50.1	.2192585
31	9 33 22.19	19 18 31.1	.8303562	12 48.4	134 42 36.2	1 50 53.5	.2193673
32	9 31 48.91	N. 19 26 33.2	9.8297225	12 42.9	135 9 4.8	N. 1 50 56.4	0.2194737

FEBRUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vec.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	9 31 48.91	N. 19 26 33.2	9.8297225	12 42.9	135 9 4.8	N. 1 50 56.4	0.21947
2	9 30 14.52	19 34 30.9	8.292342	12 37.4	135 35 32.7	1 50 58.8	21957
3	9 28 39.20	19 42 23.3	8.288924	12 31.9	136 1 59.8	1 51 0.9	21967
4	9 27 3.14	19 50 9.2	8.286979	12 26.3	136 28 26.0	1 51 2.8	21977
5	9 25 26.54	19 57 47.6	8.286512	12 20.8	136 54 51.5	1 51 4.3	21987
6	9 23 49.60	20 5 17.4	8.287525	12 15.3	137 21 16.2	1 51 5.4	21996
7	9 22 12.50	20 12 37.6	8.290017	12 9.8	137 47 40.3	1 51 6.0	22005
8	9 20 35.45	20 19 47.3	8.293986	12 4.2	138 14 3.8	1 51 6.1	22014
9	9 18 58.65	20 26 45.8	8.299425	11 58.7	138 40 26.6	1 51 5.9	22023
10	9 17 22.30	20 33 32.3	8.306321	11 53.2	139 6 48.8	1 51 5.4	22031
11	9 15 46.59	20 40 6.1	8.314655	11 47.7	139 33 10.5	1 51 4.4	22039
12	9 14 11.71	20 46 26.5	8.324402	11 42.2	139 59 31.6	1 51 3.1	22047
13	9 12 37.84	20 52 33.0	8.335537	11 36.7	140 25 52.1	1 51 1.3	22055
14	9 11 5.15	20 58 25.0	8.348041	11 31.3	140 52 12.2	1 50 59.2	22062
15	9 9 33.82	21 4 1.9	8.361888	11 25.8	141 18 31.7	1 50 56.6	22069
16	9 8 4.02	21 9 23.4	8.377046	11 20.4	141 44 50.8	1 50 53.7	22076
17	9 6 35.88	21 14 29.3	8.393482	11 15.0	142 11 9.5	1 50 50.4	22083
18	9 5 9.55	21 19 19.4	8.411165	11 9.7	142 37 27.6	1 50 46.7	22089
19	9 3 45.17	21 23 53.5	8.430060	11 4.4	143 3 45.0	1 50 42.7	22095
20	9 2 22.88	21 28 11.3	8.450130	10 59.1	143 30 1.9	1 50 38.4	22101
21	9 1 2.81	21 32 12.7	8.471339	10 53.9	143 56 18.5	1 50 33.6	22106
22	8 59 45.09	21 35 57.5	8.493649	10 48.7	144 22 34.7	1 50 28.3	22111
23	8 58 29.82	21 39 25.5	8.517022	10 43.5	144 48 50.6	1 50 22.6	22116
24	8 57 17.11	21 42 36.9	8.541422	10 38.4	145 15 6.1	1 50 16.5	22121
25	8 56 7.06	21 45 31.8	8.566811	10 33.3	145 41 21.3	1 50 10.1	22126
26	8 54 59.75	21 48 10.3	8.593149	10 28.3	146 7 36.2	1 50 3.3	22130
27	8 53 55.27	21 50 32.7	8.620395	10 23.3	146 33 50.8	1 49 56.1	22134
28	8 52 53.70	21 52 38.9	8.648510	10 18.4	147 0 5.1	1 49 48.6	22138
29	8 51 55.10	N. 21 54 29.0	9.8677455	10 13.5	147 26 19.1	N. 1 49 40.7	0.22141

MARCH, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]		
1	8 51 55.10	N. 21 54 29.0	9.8677455	10 13.5	147 26 19.1	N. 1 49 40.7	0.2214169	
2	8 50 59.54	21 56 3.3	8.707187	10 8.7	147 52 32.9	1 49 32.4	.2214491	
3	8 50 7.08	21 57 21.7	8.737663	10 3.9	148 18 46.5	1 49 23.6	.2214787	
4	8 49 17.76	21 58 24.7	8.768844	9 59.2	148 44 59.9	1 49 14.4	.2215058	
5	8 48 31.63	21 59 12.4	8.800689	9 54.5	149 11 13.1	1 49 4.8	.2215303	
6	8 47 48.72	21 59 45.2	8.833157	9 49.9	149 37 26.0	1 48 55.0	.2215521	
7	8 47 9.07	22 0 3.5	8.866209	9 45.3	150 3 38.7	1 48 45.0	.2215714	
8	8 46 32.69	22 0 7.2	8.899800	9 40.8	150 29 51.2	1 48 34.6	.2215880	
9	8 45 59.59	21 59 56.7	8.933890	9 36.3	150 56 3.8	1 48 23.8	.2216019	
10	8 45 29.78	21 59 32.1	8.968443	9 31.9	151 22 16.3	1 48 12.5	.2216132	
11	8 45 3.25	21 58 53.5	9.003422	9 27.6	151 48 28.8	1 48 0.8	.2216219	
12	8 44 39.98	21 58 1.4	9.038791	9 23.3	152 14 41.2	1 47 48.6	.2216281	
13	8 44 19.97	21 56 56.1	9.074516	9 19.1	152 40 53.5	1 47 36.0	.2216317	
14	8 44 3.19	21 55 38.0	9.110561	9 14.9	153 7 5.8	1 47 23.0	.2216328	
15	8 43 49.62	21 54 7.5	9.146892	9 10.7	153 33 18.2	1 47 9.8	.2216313	
16	8 43 39.23	21 52 24.8	9.183478	9 6.6	153 59 30.5	1 46 56.3	.2216273	
17	8 43 31.97	21 50 30.2	9.220289	9 2.6	154 25 42.9	1 46 42.4	.2216206	
18	8 43 27.81	21 48 24.0	9.257295	8 58.6	154 51 55.1	1 46 28.1	.2216113	
19	8 43 26.70	21 46 6.4	9.294470	8 54.7	155 18 7.4	1 46 13.4	.2215993	
20	8 43 28.59	21 43 37.7	9.331792	8 50.8	155 44 19.7	1 45 58.3	.2215848	
21	8 43 33.45	21 40 58.1	9.369240	8 47.0	156 10 32.2	1 45 43.0	.2215678	
22	8 43 41.23	21 38 7.7	9.406784	8 43.2	156 36 45.0	1 45 27.3	.2215483	
23	8 43 51.88	21 35 6.8	9.444401	8 39.4	157 2 57.9	1 45 11.2	.2215261	
24	8 44 5.36	21 31 55.6	9.482076	8 35.7	157 29 10.9	1 44 54.6	.2215011	
25	8 44 21.61	21 28 34.4	9.519793	8 32.1	157 55 24.2	1 44 37.6	.2214735	
26	8 44 40.60	21 25 3.3	9.557537	8 28.5	158 21 37.6	1 44 20.2	.2214434	
27	8 45 2.28	21 21 22.7	9.595292	8 24.9	158 47 51.2	1 44 2.5	.2214109	
28	8 45 26.59	21 17 32.5	9.633036	8 21.4	159 14 5.0	1 43 44.5	.2213758	
29	8 45 53.51	21 13 33.1	9.670751	8 18.0	159 40 19.2	1 43 26.1	.2213381	
30	8 46 22.97	21 9 24.5	9.708422	8 14.6	160 6 33.8	1 43 7.4	.2212977	
31	8 46 54.94	21 5 6.8	9.746036	8 11.2	160 32 48.8	1 42 48.3	.2212547	
32	8 47 29.37	N. 21 0 40.2	9.783583	8 7.8	160 59 4.0	N. 1 42 28.8	0.2212091	

APRIL, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log Rad.	
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.	
1	^{h m s} 8 47 29.37	^{° ′ ″} N. 21 0 40.2	^{° ′ ″} 9.9783583	^{h m} 8 7.8	^{° ′ ″} 160 59 4.0	^{° ′ ″} N. 1 42 28.8	^{° ′ ″} 0.221	
2	8 48 6.21	20 56 4.7	.9821052	8 4.5	161 25 19.3	1 42 9.0	.221	
3	8 48 45.40	20 51 20.5	.9858426	8 1.2	161 51 34.9	1 41 48.8	.221	
4	8 49 26.90	20 46 27.7	.9895690	7 57.9	162 17 50.9	1 41 28.2	.221	
5	8 50 10.66	20 41 26.3	.9932834	7 54.7	162 44 7.2	1 41 7.3	.221	
6	8 50 56.64	20 36 16.5	.9969850	7 51.6	163 10 23.9	1 40 46.0	.220	
7	8 51 44.80	20 30 58.3	0.0006720	7 48.5	163 36 41.1	1 40 24.4	.220	
8	8 52 35.10	20 25 31.9	.0043430	7 45.4	164 2 58.9	1 40 2.4	.220	
9	8 53 27.49	20 19 57.2	.0079976	7 42.4	164 29 17.2	1 39 40.1	.220	
10	8 54 21.89	20 14 14.5	.0116351	7 39.4	164 55 36.0	1 39 17.4	.220	
11	8 55 18.26	20 8 23.8	.0152546	7 36.4	165 21 55.2	1 38 54.4	.220	
12	8 56 16.54	20 2 25.2	.0188552	7 33.4	165 48 14.9	1 38 31.1	.220	
13	8 57 16.68	19 56 18.7	.0224360	7 30.5	166 14 35.1	1 38 7.3	.220	
14	8 58 18.64	19 50 4.5	.0259962	7 27.6	166 40 55.9	1 37 43.1	.220	
15	8 59 22.36	19 43 42.7	.0295355	7 24.7	167 7 17.3	1 37 18.5	.220	
16	9 0 27.81	19 37 13.4	.0330535	7 21.9	167 33 39.2	1 36 53.6	.220	
17	9 1 34.93	19 30 36.6	.0365499	7 19.1	168 0 1.7	1 36 28.4	.220	
18	9 2 43.69	19 23 52.3	.0400243	7 16.3	168 26 24.9	1 36 2.9	.220	
19	9 3 54.02	19 17 0.7	.0434767	7 13.6	168 52 48.6	1 35 37.0	.219	
20	9 5 5.89	19 10 1.7	.0469068	7 10.8	169 19 12.9	1 35 10.8	.219	
21	9 6 19.27	19 2 55.5	.0503142	7 8.1	169 45 37.9	1 34 44.2	.219	
22	9 7 34.11	18 55 42.0	.0536986	7 5.4	170 12 3.7	1 34 17.3	.219	
23	9 8 50.37	18 48 21.3	.0570597	7 2.8	170 38 30.4	1 33 50.0	.219	
24	9 10 8.02	18 40 53.5	.0603973	7 0.2	171 4 58.0	1 33 22.3	.219	
25	9 11 27.04	18 33 18.6	.0637117	6 57.6	171 31 26.3	1 32 54.2	.219	
26	9 12 47.37	18 25 36.7	.0670028	6 55.0	171 57 55.3	1 32 25.8	.219	
27	9 14 9.00	18 17 47.9	.0702706	6 52.4	172 24 25.0	1 31 57.1	.219	
28	9 15 31.89	18 9 52.3	.0735149	6 49.8	172 50 55.5	1 31 28.1	.219	
29	9 16 56.02	18 1 49.7	.0767352	6 47.3	173 17 26.9	1 30 58.9	.218	
30	9 18 21.34	17 53 40.1	.0799313	6 44.8	173 43 59.1	1 30 29.4	.218	
31	9 19 47.84	N. 17 45 23.5	0.0831036	6 42.3	174 10 32.2	N. 1 29 59.5	0.218	

MAY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	9 19 47 ^{h m s} .84	N. 17 45 23 ^{o ' ' "} .5	0.0831036	6 43 ^{h m} .3	174 10 32 ^{o ' ' "} .2	N. 1 29 59 ^{o ' ' "} .5	0.2186528
2	9 21 15.49	17 36 59.7	.0862522	6 39.8	174 37 6.1	1 29 29.1	.2185284
3	9 22 44.26	17 28 29.0	.0893765	6 37.4	175 3 41.0	1 28 58.3	.2184015
4	9 24 14.12	17 19 51.3	.0924760	6 34.9	175 30 16.8	1 28 27.1	.2182721
5	9 25 45.05	17 11 6.7	.0955509	6 32.5	175 56 53.6	1 27 55.6	.2181401
6	9 27 17.02	17 2 15.4	.0986010	6 30.1	176 23 31.4	1 27 23.8	.2180056
7	9 28 50.01	16 53 17.4	.1016264	6 27.7	176 50 10.2	1 26 51.7	.2178686
8	9 30 23.98	16 44 12.7	.1046270	6 25.3	177 16 50.0	1 26 19.4	.2177292
9	9 31 58.90	16 35 1.2	.1076024	6 23.0	177 43 30.8	1 25 46.8	.2175873
10	9 33 34.75	16 25 43.0	.1105527	6 20.6	178 10 12.6	1 25 13.9	.2174429
11	9 35 11.49	16 16 18.2	.1134777	6 18.3	178 36 55.4	1 24 40.5	.2172960
12	9 36 49.11	16 6 46.9	.1163774	6 16.0	179 3 39.3	1 24 6.7	.2171467
13	9 38 27.57	15 57 9.0	.1192523	6 13.7	179 30 24.3	1 23 32.6	.2169949
14	9 40 6.85	15 47 24.7	.1221027	6 11.4	179 57 10.3	1 22 58.2	.2168408
15	9 41 46.93	15 37 34.1	.1249283	6 9.2	180 23 57.5	1 22 23.5	.2166842
16	9 43 27.78	15 27 37.0	.1277291	6 6.9	180 50 45.8	1 21 48.5	.2165251
17	9 45 9.37	15 17 33.7	.1305051	6 4.7	181 17 35.3	1 21 13.2	.2163635
18	9 46 51.70	15 7 24.1	.1332566	6 2.5	181 44 26.1	1 20 37.6	.2161994
19	9 48 34.74	14 57 8.2	.1359841	6 0.3	182 11 18.1	1 20 1.7	.2160329
20	9 50 18.48	14 46 46.1	.1386879	5 58.0	182 38 11.4	1 19 25.4	.2158640
21	9 52 2.90	14 36 17.9	.1413681	5 55.8	183 5 5.9	1 18 48.7	.2156928
22	9 53 47.98	14 25 43.6	.1440248	5 53.6	183 32 1.8	1 18 11.7	.2155191
23	9 55 33.70	14 15 3.2	.1466581	5 51.5	183 58 59.0	1 17 34.3	.2153430
24	9 57 20.06	14 4 16.8	.1492681	5 49.3	184 25 57.4	1 16 56.7	.2151645
25	9 59 7.03	13 53 24.5	.1518552	5 47.2	184 52 57.2	1 16 18.7	.2149836
26	10 0 54.61	13 42 26.3	.1544197	5 45.0	185 19 58.3	1 15 40.5	.2148004
27	10 2 42.78	13 31 22.3	.1569616	5 42.9	185 47 0.7	1 15 2.1	.2146148
28	10 4 31.54	13 20 12.3	.1594811	5 40.7	186 14 4.5	1 14 23.3	.2144268
29	10 6 20.86	13 8 56.4	.1619780	5 38.6	186 41 9.6	1 13 44.1	.2142363
30	10 8 10.75	12 57 34.5	.1644524	5 36.5	187 8 16.1	1 13 4.6	.2140434
31	10 10 1.20	12 46 6.8	.1669047	5 34.4	187 35 24.1	1 12 24.8	.2138483
32	10 11 52.19	N. 12 34 33.3	0.1693351	5 32.3	188 2 33.6	N. 1 11 44.7	0.2136510

JUNE, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. Rad. V	
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.	
	^h ^m ^s	[°] ['] ^{''}		^h ^m	[°] ['] ^{''}	[°] ['] ^{''}		
1	10 11 52.19	N. 12 34 33.3	0.1693351	5 32.3	188 2 33.6	N. 1 11 44.7	0.2136	
2	10 13 43.70	12 22 54.0	.1717432	5 30.3	188 29 44.7	1 11 4.2	.2134	
3	10 15 35.74	12 11 9.1	.1741290	5 28.2	188 56 57.3	1 10 23.5	.2132	
4	10 17 28.29	11 59 18.6	.1764926	5 26.1	189 24 11.4	1 9 42.5	.2130	
5	10 19 21.34	11 47 22.4	.1788341	5 24.0	189 51 27.0	1 9 1.3	.2128	
6	10 21 14.88	11 35 20.8	.1811538	5 22.0	190 18 44.2	1 8 19.8	.2126	
7	10 23 8.89	11 23 13.7	.1834517	5 19.9	190 46 2.9	1 7 38.0	.2124	
8	10 25 3.35	11 11 1.1	.1857279	5 17.9	191 13 23.1	1 6 55.8	.2122	
9	10 26 58.27	10 58 43.2	.1879824	5 15.9	191 40 44.9	1 6 13.3	.2119	
10	10 28 53.62	10 46 20.1	.1902152	5 13.9	192 8 8.3	1 5 30.5	.2117	
11	10 30 49.40	10 33 51.8	.1924266	5 11.9	192 35 33.3	1 4 47.4	.2115	
12	10 32 45.59	10 21 18.3	.1946166	5 9.9	193 3 0.0	1 4 4.0	.2113	
13	10 34 42.19	10 8 39.8	.1967854	5 7.9	193 30 28.4	1 3 20.3	.2111	
14	10 36 39.19	9 55 56.3	.1989333	5 5.9	193 57 58.5	1 2 36.4	.2108	
15	10 38 36.59	9 43 7.9	.2010605	5 3.9	194 25 30.5	1 1 52.2	.2106	
16	10 40 34.38	9 30 14.7	.2031675	5 2.0	194 53 4.2	1 1 7.7	.2104	
17	10 42 32.55	9 17 16.6	.2052547	5 0.0	195 20 39.7	1 0 23.0	.2101	
18	10 44 31.09	9 4 13.9	.2073218	4 58.1	195 48 17.1	0 59 37.9	.2099	
19	10 46 30.00	8 51 6.5	.2093689	4 56.1	196 15 56.3	0 58 52.6	.2097	
20	10 48 29.28	8 37 54.6	.2113967	4 54.2	196 43 37.3	0 58 7.0	.2094	
21	10 50 28.92	8 24 38.1	.2134056	4 52.2	197 11 20.1	0 57 21.1	.2092	
22	10 52 28.90	8 11 17.1	.2153955	4 50.3	197 39 4.6	0 56 34.8	.2089	
23	10 54 29.25	7 57 51.7	.2173667	4 48.3	198 6 50.9	0 55 48.3	.2087	
24	10 56 29.95	7 44 21.9	.2193190	4 46.4	198 34 39.0	0 55 1.5	.2084	
25	10 58 31.00	7 30 47.7	.2212528	4 44.5	199 2 29.1	0 54 14.5	.2082	
26	11 0 32.40	7 17 9.3	.2231680	4 42.6	199 30 21.2	0 53 27.3	.2079	
27	11 2 34.16	7 3 26.6	.2250648	4 40.6	199 58 15.2	0 52 39.8	.2077	
28	11 4 36.27	6 49 39.7	.2269434	4 38.7	200 26 11.2	0 51 52.0	.2074	
29	11 6 38.73	6 35 48.7	.2288039	4 36.8	200 54 9.2	0 51 3.9	.2072	
30	11 8 41.55	6 21 53.6	.2306463	4 34.9	201 22 9.3	0 50 15.5	.2069	
31	11 10 44.72	N. 6 7 54.4	0.2324705	4 33.0	201 50 11.5	N. 0 49 26.9	0.2066	

JULY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
1	h m s 11 10 44.72	N. 6 7 54.4	0.2324705	h m 4 33.0	201 50 11.5	N. 0 49 26.9	0.2066775	
2	11 12 48.24	5 53 51.3	.2342769	4 31.1	202 18 15.7	0 48 38.0	.2064116	
3	11 14 52.10	5 39 44.4	.2360656	4 29.2	202 46 22.0	0 47 48.9	.2061437	
4	11 16 56.30	5 25 33.6	.2378364	4 27.4	203 14 30.2	0 46 59.7	.2058738	
5	11 19 0.83	5 11 19.2	.2395892	4 25.5	203 42 40.4	0 46 10.2	.2056018	
6	11 21 5.70	4 57 1.1	.2413242	4 23.7	204 10 52.7	0 45 20.4	.2053278	
7	11 23 10.90	4 42 39.5	.2430417	4 21.8	204 39 7.2	0 44 30.2	.2050517	
8	11 25 16.41	4 28 14.5	.2447416	4 20.0	205 7 23.8	0 43 39.8	.2047736	
9	11 27 22.26	4 13 46.0	.2464241	4 18.1	205 35 42.6	0 42 49.1	.2044936	
10	11 29 28.43	3 59 14.3	.2480894	4 16.3	206 4 3.6	0 41 58.2	.2042117	
11	11 31 34.92	3 44 39.4	.2497376	4 14.5	206 32 26.8	0 41 7.0	.2039278	
12	11 33 41.74	3 30 1.5	.2513688	4 12.7	207 0 52.3	0 40 15.6	.2036420	
13	11 35 48.89	3 15 20.6	.2529833	4 10.8	207 29 20.1	0 39 24.1	.2033542	
14	11 37 56.35	3 0 36.9	.2545813	4 9.0	207 57 50.1	0 38 32.5	.2030645	
15	11 40 4.15	2 45 50.4	.2561630	4 7.2	208 26 22.5	0 37 40.6	.2027730	
16	11 42 12.26	2 31 1.1	.2577285	4 5.4	208 54 57.3	0 36 48.4	.2024798	
17	11 44 20.70	2 16 9.2	.2592781	4 3.6	209 23 34.4	0 35 56.0	.2021847	
18	11 46 29.45	2 1 14.7	.2608119	4 1.8	209 52 13.8	0 35 3.3	.2018877	
19	11 48 38.54	1 46 17.8	.2623301	4 0.0	210 20 55.5	0 34 10.4	.2015886	
20	11 50 47.94	1 31 18.4	.2638332	3 58.3	210 49 39.5	0 33 17.3	.2012876	
21	11 52 57.67	1 16 16.7	.2653214	3 56.5	211 18 25.8	0 32 24.0	.2009848	
22	11 55 7.74	1 1 12.8	.2667943	3 54.7	211 47 14.4	0 31 30.5	.2006803	
23	11 57 18.15	0 46 6.6	.2682519	3 52.9	212 16 5.4	0 30 36.7	.2003742	
24	11 59 28.91	0 30 58.4	.2696949	3 51.2	212 44 58.8	0 29 42.7	.2000663	
25	12 1 40.02	0 15 48.1	.2711234	3 49.4	213 13 54.8	0 28 48.5	.1997567	
26	12 3 51.50	N. 0 0 35.9	.2725373	3 47.7	213 42 53.3	0 27 54.1	.1994454	
27	12 6 3.33	S. 0 14 38.2	.2739365	3 45.9	214 11 54.4	0 26 59.5	.1991324	
28	12 8 15.53	0 29 54.1	.2753212	3 44.2	214 40 58.0	0 26 4.8	.1988176	
29	12 10 28.10	0 45 11.8	.2766915	3 42.4	215 10 4.1	0 25 9.9	.1985012	
30	12 12 41.05	1 0 31.0	.2780472	3 40.7	215 39 12.8	0 24 14.9	.1981830	
31	12 14 54.36	1 15 51.9	.2793885	3 39.0	216 8 24.1	0 23 19.6	.1978631	
32	12 17 8.05	S. 1 31 14.2	0.2807154	3 37.3	216 37 38.0	N. 0 22 24.1	0.1975416	

AUGUST, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. V.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	12 17 8.05	S. 1 31 14.2	0.2807154	3 37.3	216 37 38.0	N. 0 22 24.1	0.19754
2	12 19 22.12	1 46 37.9	.2820280	3 35.6	217 6 54.4	0 21 28.4	.19721
3	12 21 36.56	2 2 2.8	.2833262	3 33.9	217 36 13.3	0 20 32.6	.19689
4	12 23 51.39	2 17 28.8	.2846102	3 32.2	218 5 34.9	0 19 36.6	.19657
5	12 26 6.60	2 32 55.9	.2858802	3 30.6	218 34 59.1	0 18 40.4	.19625
6	12 28 22.20	2 48 23.8	.2871363	3 28.9	219 4 26.0	0 17 44.6	.19593
7	12 30 38.19	3 3 52.5	.2883784	3 27.2	219 33 55.7	0 16 47.5	.19561
8	12 32 54.57	3 19 21.8	.2896068	3 25.5	220 3 28.0	0 15 50.8	.19529
9	12 35 11.34	3 34 51.7	.2908216	3 23.9	220 33 2.9	0 14 53.9	.19497
10	12 37 28.51	3 50 22.0	.2920230	3 22.2	221 2 40.6	0 13 56.9	.19465
11	12 39 46.08	4 5 52.6	.2932109	3 20.6	221 32 21.1	0 12 59.7	.19433
12	12 42 4.06	4 21 23.4	.2943854	3 18.9	222 2 4.5	0 12 2.5	.19399
13	12 44 22.43	4 36 54.3	.2955469	3 17.3	222 31 50.7	0 11 5.1	.19367
14	12 46 41.22	4 52 25.1	.2966957	3 15.6	223 1 39.6	0 10 7.5	.19335
15	12 49 0.43	5 7 55.8	.2978319	3 14.0	223 31 31.2	0 9 9.8	.19303
16	12 51 20.05	5 23 26.2	.2989556	3 12.4	224 1 25.6	0 8 11.9	.19271
17	12 53 40.12	5 38 56.3	.3000670	3 10.8	224 31 22.8	0 7 13.9	.19239
18	12 56 0.60	5 54 25.9	.3011663	3 9.2	225 1 22.8	0 6 15.7	.19207
19	12 58 21.53	6 9 54.9	.3022535	3 7.6	225 31 25.6	0 5 17.5	.19175
20	13 0 42.90	6 25 23.3	.3033286	3 6.0	226 1 31.4	0 4 19.1	.19143
21	13 3 4.71	6 40 50.9	.3043918	3 4.5	226 31 40.2	0 3 20.7	.19111
22	13 5 27.00	6 56 17.7	.3054433	3 2.9	227 1 52.0	0 2 22.2	.19079
23	13 7 49.77	7 11 43.4	.3064830	3 1.4	227 32 6.7	0 1 23.6	.19047
24	13 10 13.01	7 27 8.2	.3075111	2 59.8	228 2 24.4	N. 0 0 24.8	.18979
25	13 12 36.73	7 42 31.7	.3085276	2 58.3	228 32 45.1	S. 0 0 34.0	.18939
26	13 15 0.95	7 57 54.0	.3095327	2 56.7	229 3 8.7	0 1 33.0	.18900
27	13 17 25.66	8 13 14.8	.3105262	2 55.2	229 33 35.3	0 2 32.0	.18861
28	13 19 50.87	8 28 34.1	.3115081	2 53.7	230 4 4.9	0 3 31.2	.18833
29	13 22 16.58	8 43 51.7	.3124785	2 52.2	230 34 37.4	0 4 30.4	.18796
30	13 24 42.81	8 59 7.5	.3134377	2 50.7	231 5 13.0	0 5 29.7	.18760
31	13 27 9.55	9 14 21.3	.3143854	2 49.2	231 35 51.6	0 6 29.1	.18724
32	13 29 36.80	S. 9 29 33.0	0.3153218	2 47.7	232 6 33.2	S. 0 7 28.6	0.18687

SEPTEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	h m s 13 29 36.80	S. 9 29 33.0	0.3153218	2 47.7	232 6 33.2	S. 0 7 28.6	0.1868795
2	13 32 4.58	9 44 42.5	.3162467	2 46.2	232 37 17.9	0 8 28.0	.1865168
3	13 34 32.88	9 59 49.6	.3171602	2 44.7	233 8 5.8	0 9 27.5	.1861531
4	13 37 1.72	10 14 54.2	.3180624	2 43.3	233 38 56.7	0 10 27.1	.1857885
5	13 39 31.09	10 29 56.0	.3189536	2 41.8	234 9 50.8	0 11 26.8	.1854231
6	13 42 1.00	10 44 55.1	.3198339	2 40.4	234 40 48.0	0 12 26.6	.1850570
7	13 44 31.46	10 59 51.2	.3207034	2 38.9	235 11 48.4	0 13 26.4	.1846900
8	13 47 2.47	11 14 44.1	.3215621	2 37.5	235 42 52.0	0 14 26.2	.1843223
9	13 49 34.02	11 29 33.8	.3224100	2 36.1	236 13 58.8	0 15 26.0	.1839539
10	13 52 6.14	11 44 20.0	.3232475	2 34.7	236 45 8.8	0 16 25.8	.1835847
11	13 54 38.81	11 59 2.6	.3240747	2 33.3	237 16 21.9	0 17 25.6	.1832148
12	13 57 12.03	12 13 41.4	.3248918	2 31.9	237 47 38.2	0 18 25.4	.1828443
13	13 59 45.83	12 28 16.4	.3256988	2 30.5	238 18 57.7	0 19 25.3	.1824731
14	14 2 20.20	12 42 47.3	.3264960	2 29.2	238 50 20.4	0 20 25.2	.1821014
15	14 4 55.15	12 57 14.1	.3272836	2 27.8	239 21 46.3	0 21 25.1	.1817292
16	14 7 30.70	13 11 36.6	.3280615	2 26.5	239 53 15.4	0 22 25.0	.1813564
17	14 10 6.84	13 25 54.7	.3288298	2 25.1	240 24 47.8	0 23 24.9	.1809830
18	14 12 43.58	13 40 8.2	.3295887	2 23.8	240 56 23.5	0 24 24.8	.1806090
19	14 15 20.93	13 54 16.9	.3303383	2 22.5	241 28 2.5	0 25 24.6	.1802346
20	14 17 58.90	14 8 20.8	.3310787	2 21.2	241 59 44.8	0 26 24.4	.1798598
21	14 20 37.49	14 22 19.6	.3318100	2 19.9	242 31 30.4	0 27 24.2	.1794847
22	14 23 16.71	14 36 13.3	.3325321	2 18.6	243 3 19.3	0 28 24.0	.1791092
23	14 25 56.57	14 50 1.7	.3332449	2 17.3	243 35 11.6	0 29 23.7	.1787333
24	14 28 37.06	15 3 44.6	.3339487	2 16.1	244 7 7.2	0 30 23.3	.1783571
25	14 31 18.21	15 17 21.9	.3346436	2 14.8	244 39 6.1	0 31 22.8	.1779807
26	14 33 59.99	15 30 53.4	.3353294	2 13.6	245 11 8.2	0 32 22.4	.1776042
27	14 36 42.43	15 44 18.9	.3360062	2 12.3	245 43 13.6	0 33 21.9	.1772275
28	14 39 25.51	15 57 38.2	.3366739	2 11.1	246 15 22.4	0 34 21.3	.1768507
29	14 42 9.26	16 10 51.2	.3373327	2 9.9	246 47 34.5	0 35 20.6	.1764737
30	14 44 53.66	16 23 57.7	.3379824	2 8.7	247 19 50.0	0 36 19.9	.1760966
31	14 47 38.72	S. 16 36 57.7	0.3386231	2 7.5	247 52 8.9	S. 0 37 19.0	0.1757193

OCTOBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]		
1	14 47 38.72	S. 16 36 57.7	0.3386231	2 7.5	247 52 8.9	S. 0 37 19.0	0.1753	
2	14 50 24.44	16 49 50.7	.3392549	2 6.3	248 24 31.1	0 38 18.0	.1753	
3	14 53 10.84	17 2 36.7	.3398781	2 5.1	248 56 56.8	0 39 17.0	.1749	
4	14 55 57.89	17 15 15.4	.3404925	2 4.0	249 29 25.9	0 40 15.8	.1744	
5	14 58 45.62	17 27 46.5	.3410982	2 2.8	250 1 58.5	0 41 14.5	.1743	
6	15 1 34.02	17 40 9.9	.3416955	2 1.7	250 34 34.5	0 42 13.1	.1738	
7	15 4 23.09	17 52 25.5	.3422845	2 0.6	251 7 14.0	0 43 11.5	.1733	
8	15 7 12.82	18 4 33.1	.3428650	1 59.5	251 39 56.9	0 44 9.8	.1733	
9	15 10 3.21	18 16 32.7	.3434372	1 58.4	252 12 43.3	0 45 8.0	.1729	
10	15 12 54.27	18 28 24.1	.3440014	1 57.3	252 45 33.0	0 46 6.0	.1722	
11	15 15 45.99	18 40 7.0	.3445580	1 56.2	253 18 26.0	0 47 4.0	.1719	
12	15 18 38.38	18 51 41.2	.3451067	1 55.2	253 51 22.4	0 48 1.8	.1711	
13	15 21 31.45	19 3 6.6	.3456477	1 54.1	254 24 22.3	0 48 59.5	.1711	
14	15 24 25.19	19 14 22.9	.3461814	1 53.0	254 57 25.7	0 49 56.9	.1708	
15	15 27 19.61	19 25 30.0	.3467079	1 51.9	255 30 32.6	0 50 54.1	.1703	
16	15 30 14.70	19 36 27.8	.3472271	1 50.9	256 3 42.9	0 51 51.1	.1703	
17	15 33 10.47	19 47 16.0	.3477391	1 49.9	256 36 56.6	0 52 48.0	.1699	
18	15 36 6.92	19 57 54.5	.3482440	1 48.9	257 10 13.7	0 53 44.6	.1693	
19	15 39 4.04	20 8 23.1	.3487418	1 47.9	257 43 34.3	0 54 41.1	.1688	
20	15 42 1.85	20 18 41.7	.3492326	1 47.0	258 16 58.4	0 55 37.3	.1683	
21	15 45 0.34	20 28 50.1	.3497166	1 46.0	258 50 26.0	0 56 33.3	.1683	
22	15 47 59.51	20 38 48.1	.3501935	1 45.1	259 23 57.0	0 57 29.0	.1677	
23	15 50 59.35	20 48 35.6	.3506635	1 44.1	259 57 31.4	0 58 24.6	.1677	
24	15 53 59.86	20 58 12.3	.3511265	1 43.2	260 31 9.2	0 59 20.0	.1677	
25	15 57 1.04	21 7 38.1	.3515827	1 42.3	261 4 50.5	1 0 15.2	.1666	
26	16 0 2.89	21 16 52.7	.3520320	1 41.4	261 38 35.3	1 1 10.0	.1663	
27	16 3 5.41	21 25 56.0	.3524745	1 40.5	262 12 23.5	1 2 4.5	.1660	
28	16 6 8.57	21 34 47.8	.3529102	1 39.6	262 46 15.1	1 2 58.8	.1656	
29	16 9 12.39	21 43 27.9	.3533390	1 38.7	263 20 10.1	1 3 52.8	.1652	
30	16 12 16.85	21 51 56.1	.3537611	1 37.9	263 54 8.5	1 4 46.5	.1649	
31	16 15 21.94	22 0 12.4	.3541766	1 37.0	264 28 10.4	1 5 39.9	.1643	
32	16 18 1.00		.3545854	1 36.2	265 2 15.8	S. 1 6 33.0	0.1641	

NOVEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	16 18 27.67	S. 22 8 16.4	0.3545854	1 36.2	265 2 15.8	S. 1 6 33.0	0.1641871
2	16 21 34.02	22 16 8.1	.3549876	1 35.3	265 36 24.6	1 7 25.9	.1638270
3	16 24 40.98	22 23 47.3	.3553832	1 34.5	266 10 36.8	1 8 18.4	.1634680
4	16 27 48.55	22 31 13.7	.3557724	1 33.7	266 44 52.5	1 9 10.6	.1631103
5	16 30 56.70	22 38 27.3	.3561553	1 32.9	267 19 11.5	1 10 2.5	.1627540
6	16 34 5.44	22 45 27.8	.3565320	1 32.1	267 53 34.0	1 10 54.0	.1623989
7	16 37 14.76	22 52 15.0	.3569027	1 31.3	268 27 59.9	1 11 45.2	.1620452
8	16 40 24.64	22 58 48.9	.3572676	1 30.5	269 2 29.1	1 12 36.1	.1616930
9	16 43 35.07	23 5 9.2	.3576268	1 29.7	269 37 1.7	1 13 26.6	.1613422
10	16 46 46.05	23 11 15.8	.3579804	1 28.9	270 11 37.6	1 14 16.7	.1609929
11	16 49 57.56	23 17 8.5	.3583285	1 28.2	270 46 16.8	1 15 6.4	.1606452
12	16 53 9.61	23 22 47.3	.3586711	1 27.5	271 20 59.3	1 15 55.7	.1602989
13	16 56 22.18	23 28 12.0	.3590083	1 26.8	271 55 45.2	1 16 44.6	.1599541
14	16 59 35.27	23 33 22.5	.3593402	1 26.0	272 30 34.5	1 17 33.1	.1596109
15	17 2 48.86	23 38 18.7	.3596669	1 25.3	273 5 27.3	1 18 21.2	.1592693
16	17 6 2.95	23 43 0.5	.3599887	1 24.6	273 40 23.4	1 19 9.0	.1589295
17	17 9 17.52	23 47 27.6	.3603054	1 23.9	274 15 22.8	1 19 56.4	.1585915
18	17 12 32.56	23 51 40.0	.3606171	1 23.2	274 50 25.5	1 20 43.4	.1582554
19	17 15 48.06	23 55 37.5	.3609239	1 22.5	275 25 31.4	1 21 29.9	.1579212
20	17 19 4.00	23 59 20.1	.3612259	1 21.8	276 0 40.6	1 22 16.0	.1575889
21	17 22 20.38	24 2 47.5	.3615230	1 21.2	276 35 52.9	1 23 1.6	.1572585
22	17 25 37.19	24 5 59.7	.3618152	1 20.5	277 11 8.3	1 23 46.8	.1569300
23	17 28 54.40	24 8 56.4	.3621024	1 19.9	277 46 26.9	1 24 31.5	.1566036
24	17 32 12.01	24 11 37.8	.3623847	1 19.2	278 21 48.7	1 25 15.7	.1562792
25	17 35 29.99	24 14 3.5	.3626622	1 18.6	278 57 13.8	1 25 59.5	.1559570
26	17 38 48.33	24 16 13.6	.3629349	1 17.9	279 32 42.2	1 26 42.9	.1556371
27	17 42 7.02	24 18 7.9	.3632027	1 17.3	280 8 13.7	1 27 25.7	.1553193
28	17 45 26.03	24 19 46.3	.3634658	1 16.7	280 43 48.3	1 28 7.9	.1550038
29	17 48 45.36	24 21 8.9	.3637241	1 16.1	281 19 26.1	1 28 49.6	.1546907
30	17 52 4.99	24 22 15.5	.3639778	1 15.4	281 55 6.9	1 29 30.8	.1543798
31	17 55 24.90	S. 24 23 6.1	0.3642267	1 14.8	282 30 50.8	S. 1 30 11.6	0.1540711

DECEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. Rad. V
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	^h 17 ^m 55 ^s 24.90	S. 24° 23' 6".1	0.3642267	^h 14.8	282° 30' 50".8	S. 1° 30' 11".6	0.1540
2	17 58 45.06	24 23 40.6	.3644709	14.2	283 6 37.8	1 30 51.9	.1537
3	18 2 5.46	24 23 58.8	.3647108	13.6	283 42 27.8	1 31 31.6	.1534
4	18 5 26.07	24 24 0.7	.3649465	13.0	284 18 20.7	1 32 10.7	.1531
5	18 8 46.87	24 23 46.3	.3651779	12.4	284 54 16.5	1 32 49.2	.1528
6	18 12 7.86	24 23 15.5	.3654052	11.8	285 30 15.3	1 33 27.2	.1525
7	18 15 29.02	24 22 28.3	.3656284	11.3	286 6 17.1	1 34 4.7	.1522
8	18 18 50.34	24 21 24.7	.3658478	10.7	286 42 21.8	1 34 41.7	.1519
9	18 22 11.80	24 20 4.7	.3660634	10.1	287 18 29.5	1 35 18.0	.1516
10	18 25 33.38	24 18 28.2	.3662754	9.5	287 54 40.2	1 35 53.6	.1514
11	18 28 55.06	24 16 35.2	.3664839	8.9	288 30 53.8	1 36 28.7	.1511
12	18 32 16.84	24 14 25.8	.3666890	8.3	289 7 10.3	1 37 3.1	.1508
13	18 35 38.69	24 11 59.8	.3668905	7.7	289 43 29.5	1 37 37.0	.1505
14	18 39 0.60	24 9 17.5	.3670884	7.1	290 19 51.6	1 38 10.4	.1502
15	18 42 22.55	24 6 18.6	.3672832	6.6	290 56 16.5	1 38 43.1	.1500
16	18 45 44.52	24 3 3.3	.3674753	6.0	291 32 44.1	1 39 15.2	.1497
17	18 49 6.49	23 59 31.5	.3676642	5.4	292 9 14.3	1 39 46.7	.1494
18	18 52 28.46	23 55 43.3	.3678497	4.8	292 45 47.2	1 40 17.6	.1491
19	18 55 50.41	23 51 38.7	.3680320	4.2	293 22 22.6	1 40 47.8	.1488
20	18 59 12.32	23 47 17.6	.3682112	3.6	293 59 0.6	1 41 17.4	.1485
21	19 2 34.18	23 42 40.2	.3683872	3.1	294 35 41.2	1 41 46.3	.1482
22	19 5 55.98	23 37 46.4	.3685602	2.5	295 12 24.3	1 42 14.5	.1480
23	19 9 17.71	23 32 36.3	.3687300	2.0	295 49 10.0	1 42 42.0	.1477
24	19 12 39.34	23 27 10.0	.3688967	1.4	296 25 58.2	1 43 8.9	.1474
25	19 16 0.86	23 21 27.5	.3690603	0.8	297 2 49.1	1 43 35.1	.1471
26	19 19 22.25	23 15 28.9	.3692208	0.2	297 39 42.5	1 44 0.6	.1468
27	19 22 43.49	23 9 14.2	.3693781	0.59.7	298 16 38.3	1 44 25.4	.1465
28	19 26 4.56	23 2 43.6	.3695322	0.59.1	298 53 36.5	1 44 49.4	.1462
29	19 29 25.45	22 55 57.1	.3696834	0.58.5	299 30 36.9	1 45 12.8	.1460
30	19 32 46.14	22 48 54.8	.3698316	0.57.9	300 7 39.6	1 45 35.4	.1457
31	19 36 6.61	22 41 36.9	.3699769	0.57.3	300 44 44.5	1 45 57.4	.1454
32	19 39 26.85	S. 22° 34' 3".4	0.3701194	0.56.7	301 21 51.5	S. 1° 46' 18".7	0.1459

MEAN TIME.

Date.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1837.	^h ^m	[°] [']		^h ^m	[°] [']	[°] [']	
Jan. 1	18 8.2	S. 22 6	0.4951	23 22.8	267 45	N. 1 56	0.3347
5	18 17.5	22 10	0.4941	23 16.4	269 3	1 47	0.3350
9	18 26.7	22 12	0.4929	23 9.8	270 20	1 37	0.3352
13	18 36.0	22 12	0.4915	23 3.3	271 37	1 28	0.3355
17	18 45.2	22 8	0.4899	22 56.8	272 54	1 18	0.3358
21	18 54.3	22 3	0.4881	22 50.2	274 10	1 9	0.3361
25	19 3.4	21 57	0.4861	22 43.5	275 26	1 0	0.3364
29	19 12.5	21 49	0.4839	22 36.8	276 41	0 51	0.3368
Feb. 2	19 21.5	21 40	0.4815	22 30.0	277 57	0 41	0.3371
6	19 30.4	21 27	0.4788	22 23.1	279 13	0 32	0.3375
10	19 39.3	21 14	0.4760	22 16.2	280 30	0 22	0.3379
14	19 48.1	20 59	0.4730	22 9.3	281 46	0 13	0.3383
18	19 56.8	20 43	0.4697	22 2.2	283 2	N. 0 3	0.3387
22	20 5.4	20 26	0.4662	21 54.9	284 18	S. 0 7	0.3392
26	20 14.0	20 7	0.4625	21 47.7	285 33	0 16	0.3397
March 2	20 22.4	19 46	0.4586	21 40.5	286 48	0 25	0.3401
6	20 30.7	19 25	0.4545	21 33.0	288 3	0 35	0.3406
10	20 38.9	19 3	0.4501	21 25.4	289 18	0 44	0.3411
14	20 47.0	18 41	0.4455	21 17.7	290 32	0 54	0.3416
18	20 54.9	18 17	0.4407	21 9.8	291 46	1 3	0.3421
22	21 2.8	17 53	0.4356	21 1.9	293 0	1 12	0.3426
26	21 10.6	17 28	0.4303	20 54.0	294 14	1 21	0.3431
30	21 18.1	17 3	0.4248	20 45.7	295 29	1 30	0.3437
April 3	21 25.6	16 38	0.4191	20 37.3	296 43	1 39	0.3442
7	21 33.0	16 12	0.4131	20 28.8	297 56	1 48	0.3448
11	21 40.2	15 46	0.4069	20 20.3	299 10	1 57	0.3454
15	21 47.2	15 20	0.4005	20 11.5	300 23	2 6	0.3460
19	21 54.1	14 55	0.3937	20 2.6	301 37	2 15	0.3466
23	22 0.8	14 30	0.3868	19 53.7	302 50	2 23	0.3472
27	22 7.4	14 5	0.3796	19 44.4	304 3	2 32	0.3478
May 1	22 13.9	13 41	0.3722	19 35.1	305 15	2 40	0.3484
5	22 20.2	S. 13 18	0.3645	19 25.7	306 28	S. 2 49	0.3491

MEAN TIME.

Date.		Geocentric.				Heliocentric.		
		Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	I Ra
		Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	
1837.		^h ^m	^o [']		^h ^m	^o [']	^o [']	
May	5	22 20.2	S. 13 18	0.3645	19 25.7	306 28	S. 2 49	0
	9	22 26.2	12 55	0.3566	19 15.9	307 40	2 57	0
	13	22 32.1	12 33	0.3485	19 5.9	308 52	3 5	0
	17	22 37.8	12 14	0.3400	18 55.7	310 3	3 13	0
	21	22 43.3	11 55	0.3314	18 45.5	311 14	3 21	0
June	25	22 48.5	11 37	0.3226	18 35.0	312 25	3 29	0
	29	22 53.6	11 21	0.3135	18 24.2	313 36	3 37	0
	2	22 58.5	11 6	0.3042	18 13.3	314 47	3 44	0
	6	23 3.0	10 54	0.2947	18 2.1	315 58	3 52	0
	10	23 7.3	10 44	0.2851	17 50.5	317 8	3 59	0
July	14	23 11.4	10 35	0.2753	17 38.8	318 19	4 6	0
	18	23 15.0	10 30	0.2653	17 26.7	319 29	4 13	0
	22	23 18.5	10 27	0.2552	17 14.3	320 39	4 20	0
	26	23 21.5	10 26	0.2451	17 1.4	321 49	4 27	0
	30	23 24.2	10 29	0.2350	16 48.4	322 59	4 34	0
Aug.	4	23 26.6	10 33	0.2248	16 35.0	324 8	4 40	0
	8	23 28.5	10 41	0.2146	16 21.1	325 17	4 47	0
	12	23 30.0	10 53	0.2047	16 6.8	326 26	4 53	0
	16	23 31.1	11 7	0.1950	15 52.1	327 35	4 59	0
	20	23 31.7	11 25	0.1855	15 37.0	328 43	5 5	0
Sept.	24	23 32.0	11 45	0.1764	15 21.4	329 51	5 11	0
	28	23 31.6	12 7	0.1678	15 5.3	330 58	5 17	0
	1	23 30.7	12 33	0.1598	14 48.6	332 5	5 23	0
	5	23 29.6	13 2	0.1525	14 31.6	333 12	5 28	0
	9	23 27.8	13 32	0.1460	14 14.2	334 20	5 34	0
Sept.	13	23 25.8	14 4	0.1404	13 56.3	335 28	5 39	0
	17	23 23.3	14 37	0.1359	13 38.0	336 35	5 44	0
	21	23 20.4	15 11	0.1325	13 19.4	337 42	5 49	0
	25	23 17.2	15 44	0.1304	13 0.5	338 49	5 53	0
	29	23 13.7	16 17	0.1294	12 41.3	339 55	5 57	0
Sept.	2	23 10.1	16 48	0.1299	12 22.0	341 1	6 2	0
	6	23 6.5	S. 17 17	0.1316	12 2.7	342 7	S. 6 6	0

MEAN TIME.

Date.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1837.	^h ^m	[°] [']		^h ^m	[°] [']	[°] [']	
Sept. 6	23 6.5	S. 17 17	0.1316	12 2.7	342 7	S. 6 6	0.3711
10	23 2.9	17 44	0.1346	11 43.4	343 13	6 10	0.3718
14	22 59.4	18 8	0.1389	11 24.0	344 19	6 14	0.3726
18	22 55.9	18 28	0.1444	11 4.9	345 24	6 18	0.3733
22	22 52.7	18 44	0.1511	10 46.1	346 29	6 22	0.3740
26	22 49.9	18 56	0.1588	10 27.5	347 34	6 26	0.3747
30	22 47.3	19 5	0.1673	10 9.3	348 38	6 29	0.3754
Oct. 4	22 45.2	19 9	0.1765	9 51.5	349 42	6 32	0.3762
8	22 43.4	19 11	0.1865	9 34.1	350 46	6 35	0.3769
12	22 42.2	19 8	0.1972	9 17.1	351 51	6 38	0.3776
16	22 41.3	19 2	0.2082	9 0.6	352 55	6 41	0.3783
20	22 41.0	18 52	0.2196	8 44.5	353 58	6 44	0.3790
24	22 41.2	18 39	0.2312	8 28.9	355 2	6 47	0.3797
28	22 41.7	18 24	0.2429	8 13.8	356 6	6 49	0.3804
Nov. 1	22 42.7	18 5	0.2548	7 59.1	357 9	6 51	0.3811
5	22 44.0	17 45	0.2668	7 44.7	358 12	6 53	0.3818
9	22 45.8	17 23	0.2787	7 30.8	359 15	6 55	0.3824
13	22 47.9	16 58	0.2905	7 17.3	0 18	6 57	0.3831
17	22 50.5	16 31	0.3020	7 4.2	1 20	6 59	0.3838
21	22 53.3	16 2	0.3135	6 51.2	2 22	7 1	0.3844
25	22 56.4	15 32	0.3249	6 38.7	3 24	7 2	0.3851
29	22 59.9	15 1	0.3360	6 26.4	4 26	7 3	0.3857
Dec. 3	23 3.5	14 28	0.3468	6 14.3	5 27	7 4	0.3864
7	23 7.3	13 52	0.3575	6 2.3	6 29	7 5	0.3870
11	23 11.4	13 16	0.3679	5 50.8	7 30	7 6	0.3877
15	23 15.8	12 40	0.3779	5 39.4	8 32	7 7	0.3883
19	23 20.3	12 3	0.3877	5 28.1	9 33	7 7	0.3889
23	23 25.0	11 24	0.3973	5 17.1	10 34	7 8	0.3895
27	23 29.8	10 44	0.4064	5 6.2	11 34	7 8	0.3901
31	23 34.8	10 4	0.4152	4 55.5	12 34	7 8	0.3907
35	23 39.9	S. 9 23	0.4240	4 45.0	13 34	S. 7 8	0.3913

EPHEMERIS OF VESTA FOR THE OPPOSITION.

At Greenwich Mean Midnight.

Date,	Right Ascension.	Declination.	Logarithm of the Distance from	
			Earth.	Sun.
1837.	^h ^m ^s	[°] ['] ["]		
August 4	23 29 46.25	S. 12 58 11.5	0.15328	0.36511
5	23 29 23.93	13 5 35.1	0.15156	0.36529
6	23 29 0.15	13 13 4.7	0.14987	0.36547
7	23 28 34.87	13 20 40.5	0.14825	0.36566
8	23 28 8.04	13 28 22.3	0.14668	0.36584
9	23 27 39.61	13 36 10.0	0.14517	0.36603
10	23 27 9.56	13 44 3.7	0.14372	0.36621
11	23 26 37.90	13 52 2.8	0.14233	0.36640
12	23 26 4.60	14 0 7.4	0.14100	0.36658
13	23 25 29.71	14 8 16.9	0.13973	0.36676
14	23 24 53.34	14 16 29.9	0.13853	0.36695
15	23 24 15.54	14 24 46.2	0.13740	0.36713
16	23 23 36.35	14 33 5.1	0.13633	0.36732
17	23 22 55.80	14 41 26.2	0.13533	0.36750
18	23 22 13.93	14 49 49.0	0.13441	0.36769
19	23 21 30.79	14 58 12.8	0.13356	0.36787
20	23 20 46.45	15 6 37.3	0.13277	0.36805
21	23 20 0.93	15 15 1.5	0.13207	0.36824
22	23 19 14.29	15 23 25.2	0.13145	0.36842
23	23 18 26.59	15 31 47.5	0.13089	0.36861
24	23 17 37.90	15 40 8.0	0.13042	0.36879
25	23 16 48.28	15 48 25.9	0.13004	0.36897
26	23 15 57.78	15 56 40.7	0.12972	0.36916
27	23 15 6.49	16 4 51.7	0.12949	0.36934
28	23 14 14.45	16 12 58.2	0.12935	0.36953
29	23 13 21.78	16 20 59.6	0.12928	0.36971
30	23 12 28.52	16 28 55.4	0.12929	0.36989
31	23 11 34.75	16 36 44.8	0.12940	0.37008
September 1	23 10 40.55	16 44 27.4	0.12958	0.37026
2	23 9 46.00	16 52 2.5	0.12985	0.37044
3	23 8 51.19	S. 16 59 29.4	0.13020	0.37063

EPHEMERIS OF VESTA FOR THE OPPOSITION.

At Greenwich Mean Midnight.

Date.	Right Ascension.	Declination.	Logarithm of the Distance from the	
			Earth.	Sun.
1837.				
September 3	23 8 51.19	S. 16 59 29.4	0.13020	0.37063
4	23 7 56.18	17 6 47.8	0.13064	0.37081
5	23 7 1.06	17 13 57.0	0.13115	0.37099
6	23 6 5.92	17 20 56.5	0.13175	0.37117
7	23 5 10.84	17 27 45.9	0.13244	0.37136
8	23 4 15.89	17 34 24.7	0.13320	0.37154
9	23 3 21.13	17 40 52.5	0.13404	0.37172
10	23 2 26.67	17 47 8.7	0.13496	0.37191
11	23 1 32.55	17 53 13.2	0.13597	0.37209
12	23 0 38.86	17 59 5.6	0.13705	0.37227
13	22 59 45.67	18 4 45.5	0.13820	0.37245
14	22 58 53.05	18 10 12.7	0.13943	0.37264
15	22 58 1.06	18 15 26.8	0.14074	0.37282
16	22 57 9.78	18 20 27.7	0.14212	0.37300
17	22 56 19.26	18 25 15.0	0.14357	0.37318
18	22 55 29.58	18 29 48.7	0.14509	0.37336
19	22 54 40.80	18 34 8.4	0.14668	0.37354
20	22 53 52.98	18 38 14.1	0.14833	0.37373
21	22 53 6.17	18 42 5.5	0.15006	0.37391
22	22 52 20.45	18 45 42.5	0.15185	0.37409
23	22 51 35.85	18 49 5.1	0.15370	0.37427
24	22 50 52.44	18 52 13.2	0.15561	0.37445
25	22 50 10.26	18 55 6.6	0.15758	0.37463
26	22 49 29.30	18 57 45.5	0.15962	0.37481
27	22 48 49.62	19 0 10.1	0.16171	0.37499
28	22 48 11.31	19 2 20.1	0.16385	0.37517
29	22 47 34.41	19 4 15.5	0.16604	0.37535
30	22 46 58.95	19 5 56.3	0.16829	0.37553
October 1	22 46 25.03	19 7 22.2	0.17058	0.37571
2	22 45 52.73	19 8 33.0	0.17292	0.37589
3	22 45 22.15	S. 19 9 28.6	0.17531	0.37606

MEAN TIME.

Date.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1837.	^h ^m	[°] [']		^h ^m	[°] [']	[°] [']	
Jan. 1	13 43.0	S. 6 38	0.4971	18 56.8	188 1	N. 3 54	0.4820
5	13 46.5	6 45	0.4902	18 44.7	188 41	4 3	0.4832
9	13 49.9	6 50	0.4832	18 32.2	189 20	4 11	0.4843
13	13 53.1	6 53	0.4759	18 19.5	189 59	4 20	0.4854
17	13 56.0	6 54	0.4684	18 6.8	190 38	4 28	0.4865
21	13 58.7	6 54	0.4607	17 53.6	191 17	4 37	0.4876
25	14 1.1	6 50	0.4530	17 40.2	191 56	4 45	0.4886
29	14 3.2	6 45	0.4451	17 26.6	192 35	4 54	0.4897
Feb. 2	14 5.1	6 39	0.4371	17 12.7	193 13	5 2	0.4907
6	14 6.7	6 30	0.4290	16 58.5	193 51	5 10	0.4917
10	14 7.8	6 17	0.4211	16 43.9	194 29	5 18	0.4927
14	14 8.8	6 4	0.4131	16 29.1	195 7	5 26	0.4937
18	14 9.2	5 48	0.4053	16 13.7	195 44	5 34	0.4947
22	14 9.4	5 29	0.3977	15 58.0	196 22	5 42	0.4957
26	14 9.2	5 9	0.3904	15 42.0	196 59	5 49	0.4966
March 2	14 8.7	4 47	0.3833	15 25.7	197 37	5 57	0.4975
6	14 7.8	4 23	0.3766	15 9.1	198 14	6 4	0.4984
10	14 6.6	3 57	0.3703	14 52.1	198 51	6 12	0.4993
14	14 5.1	3 29	0.3646	14 34.9	199 28	6 19	0.5002
18	14 3.1	3 0	0.3594	14 17.2	200 5	6 27	0.5011
22	14 1.0	2 30	0.3551	13 59.2	200 41	6 34	0.5019
26	13 58.6	1 59	0.3514	13 41.1	201 18	6 41	0.5027
30	13 56.0	1 28	0.3486	13 22.7	201 54	6 48	0.5035
April 3	13 53.1	0 57	0.3465	13 4.0	202 31	6 55	0.5043
7	13 50.1	S. 0 26	0.3455	12 45.2	203 7	7 2	0.5051
11	13 47.0	N. 0 5	0.3454	12 26.4	203 43	7 9	0.5059
15	13 43.8	0 34	0.3461	12 7.5	204 19	7 16	0.5066
19	13 40.7	1 1	0.3478	11 48.7	204 54	7 23	0.5073
23	13 37.5	1 27	0.3503	11 29.9	205 30	7 30	0.5080
27	13 34.5	1 51	0.3539	11 11.3	206 5	7 37	0.5087
May 1	13 31.6	2 12	0.3580	10 52.7	206 40	7 43	0.5094
5	13.28.9	N. 2 31	0.3631	10 34.3	207 16	N. 7 50	0.5101

MEAN TIME.

Date.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1837.	^h ^m	[°] [']		^h ^m	[°] [']	[°] [']	
May 5	13 28.9	N. 2 31	0.3631	10 34.3	207 16	N. 7 50	0.5101
9	13 26.4	2 49	0.3687	10 16.1	207 51	7 56	0.5108
13	13 24.1	3 2	0.3750	9 58.1	208 27	8 3	0.5115
17	13 22.2	3 13	0.3819	9 40.4	209 2	8 9	0.5121
21	13 20.5	3 22	0.3893	9 23.2	209 37	8 15	0.5127
25	13 19.0	3 28	0.3970	9 6.0	210 12	8 21	0.5133
29	13 17.9	3 31	0.4051	8 49.0	210 47	8 27	0.5139
June 2	13 17.1	3 32	0.4135	8 32.6	211 21	8 33	0.5144
6	13 16.6	3 30	0.4221	8 16.3	211 56	8 39	0.5150
10	13 16.4	3 25	0.4307	8 0.5	212 31	8 45	0.5155
14	13 16.7	3 19	0.4394	7 45.1	213 6	8 51	0.5161
18	13 17.0	3 11	0.4482	7 29.7	213 41	8 57	0.5166
22	13 17.7	3 1	0.4571	7 14.6	214 15	9 3	0.5170
26	13 18.7	2 48	0.4658	6 59.9	214 50	9 8	0.5174
30	13 19.9	2 35	0.4745	6 45.5	215 24	9 14	0.5179
July 4	13 21.3	2 20	0.4831	6 31.1	215 58	9 19	0.5184
8	13 23.0	2 4	0.4915	6 17.2	216 33	9 25	0.5188
12	13 25.0	1 46	0.4998	6 3.4	217 7	9 30	0.5192
16	13 27.2	1 27	0.5080	5 49.9	217 41	9 36	0.5196
20	13 29.6	1 7	0.5159	5 36.5	218 15	9 41	0.5200
24	13 32.2	0 46	0.5236	5 23.4	218 50	9 46	0.5204
28	13 35.0	0 25	0.5311	5 10.5	219 24	9 51	0.5208
Aug. 1	13 37.9	N. 0 3	0.5384	4 57.6	219 58	9 56	0.5212
5	13 41.0	S. 0 20	0.5453	4 45.1	220 31	10 1	0.5215
9	13 44.3	0 44	0.5523	4 32.7	221	0 6	0.5218
13	13 47.7	1 7	0.5589	4 20.3	222	0 11	0.5221
17	13 51.3	1 31	0.5652	4 8.1	223	0 16	0.5224
21	13 55.0	1 56	0.5712	4 0.0	224	0 20	0.5227
25	13 58.9	2 21	0.5770	3 43.3	225	0 25	0.5230
29	14 2.9	2 46	0.5826	3 25.5	226	0 30	0.5232
Sept. 2	14 6.9	3 11	0.5879	3 08.8	227	0 35	0.5235
6	14 11.1	S. 3 36	0.5931	2 51.3	228	0 40	0.5237

MEAN TIME.

Date.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1837.	^h ^m	[°] [']		^h ^m	[°] [']	[°] [']	
Sept. 6	14 11.1	S. 3 36	0.5928	3 9.3	225 2	N. 10 38	0.5237
10	14 15.4	4 2	0.5976	2 57.9	225 36	10 43	0.5239
14	14 19.9	4 27	0.6020	2 46.5	226 10	10 47	0.5241
18	14 24.4	4 52	0.6062	2 35.3	226 45	10 52	0.5243
22	14 28.9	5 16	0.6101	2 24.0	227 19	10 55	0.5245
26	14 33.6	5 41	0.6137	2 12.9	227 53	10 59	0.5247
30	14 38.3	6 5	0.6171	2 1.9	228 25	11 3	0.5248
Oct. 4	14 43.1	6 28	0.6202	1 51.0	228 58	11 7	0.5249
8	14 48.0	6 52	0.6230	1 40.1	229 31	11 11	0.5250
12	14 53.0	7 15	0.6255	1 29.4	230 5	11 15	0.5251
16	14 58.0	7 38	0.6279	1 18.7	230 38	11 19	0.5252
20	15 3.1	8 0	0.6298	1 8.1	231 12	11 23	0.5253
24	15 8.3	8 21	0.6315	0 57.4	231 46	11 26	0.5253
28	15 13.5	8 42	0.6329	0 46.9	232 20	11 30	0.5253
Nov. 1	15 18.7	9 1	0.6341	0 36.3	232 53	11 33	0.5254
5	15 24.0	9 20	0.6350	0 25.8	233 26	11 37	0.5254
9	15 29.3	9 38	0.6355	0 15.4	233 59	11 40	0.5254
13	15 34.6	9 56	0.6358	0 5.0	234 33	11 44	0.5254
17	15 40.0	10 13	0.6359	23 52.0	235 7	11 47	0.5254
21	15 45.4	10 28	0.6356	23 41.6	235 42	11 50	0.5253
25	15 50.8	10 43	0.6351	23 31.3	236 16	11 53	0.5253
29	15 56.2	10 57	0.6343	23 21.6	236 50	11 56	0.5252
Dec. 3	16 1.6	11 10	0.6332	23 10.6	237 24	11 59	0.5251
7	16 7.1	11 21	0.6318	23 0.3	237 59	12 2	0.5250
11	16 12.5	11 32	0.6302	22 50.0	238 33	12 5	0.5249
15	16 17.9	11 42	0.6282	22 39.6	239 7	12 8	0.5247
19	16 23.3	11 51	0.6260	22 29.3	239 41	12 11	0.5246
23	16 28.7	11 58	0.6234	22 19.0	240 15	12 14	0.5244
27	16 33.9	12 5	0.6206	22 8.5	240 48	12 16	0.5243
31	16 39.1	12 9	0.6175	21 57.9	241 22	12 19	0.5241
35	16 44.5	S. 12 14	0.6142	21 47.2	241 57	N. 12 22	0.5240

EPHEMERIS OF JUNO FOR THE OPPOSITION.

At Greenwich Mean Midnight.

Date.	Right Ascension.	Declination.	Logarithm of the Distance from the	
			Earth.	Sun.
1837.	^h ^m ^s	[°] ['] ["]		
March 14	14 4 51.76	S. 3 25 50.3	0.36393	0.50026
15	14 4 24.81	3 18 40.7	0.36261	0.50048
16	14 3 56.74	3 11 26.6	0.36134	0.50069
17	14 3 27.55	3 4 8.2	0.36011	0.50091
18	14 2 57.26	2 56 45.6	0.35892	0.50112
19	14 2 25.85	2 49 19.0	0.35777	0.50133
20	14 1 53.34	2 41 48.7	0.35667	0.50154
21	14 1 19.78	2 34 15.0	0.35560	0.50175
22	14 0 45.19	2 26 38.1	0.35458	0.50196
23	14 0 9.61	2 18 58.4	0.35361	0.50216
24	13 59 33.06	2 11 16.4	0.35270	0.50236
25	13 58 55.64	2 3 32.2	0.35183	0.50257
26	13 58 17.37	1 55 46.4	0.35101	0.50277
27	13 57 38.25	1 47 59.2	0.35024	0.50298
28	13 56 58.31	1 40 10.8	0.34952	0.50318
29	13 56 17.58	1 32 21.4	0.34886	0.50338
30	13 55 36.10	1 24 31.7	0.34825	0.50358
31	13 54 53.91	1 16 41.8	0.34769	0.50378
April 1	13 54 11.05	1 8 52.1	0.34719	0.50398
2	13 53 27.57	1 1 3.0	0.34674	0.50418
3	13 52 43.50	0 53 14.9	0.34636	0.50438
4	13 51 58.88	0 45 28.1	0.34603	0.50457
5	13 51 13.78	0 37 41.0	0.34575	0.50477
6	13 50 28.22	0 29 54.9	0.34553	0.50496
7	13 49 42.26	0 22 9.8	0.34537	0.50515
8	13 48 55.94	0 14 19.7		0.50535
9	13 48 9.32	S. 0 6 29.6		0.50554
10	13 47 22.44	N. 0 0 39.5		0.50573
11	13 46 35.33			0.50592
12	13 45 48.07			0.50610
8 13	13 45 0.69			0.50629

EPHEMERIS OF JUNO FOR THE OPPOSITION.

At Greenwich Mean Midnight.

Date.		Right Ascension.	Declination.	Logarithm of the Distance from the	
				Earth.	Sun.
1837.		^h ^m ^s	[°] ['] ["]		
April	13	13 45 0.69	N.0 22 30.9	0.34563	0.50629
	14	13 44 13.23	0 29 44.0	0.34587	0.50648
	15	13 43 25.74	0 36 51.8	0.34618	0.50666
	16	13 42 38.27	0 43 54.1	0.34654	0.50685
	17	13 41 50.86	0 50 50.5	0.34696	0.50703
	18	13 41 3.56	0 57 40.8	0.34743	0.50721
	19	13 40 16.41	1 4 24.6	0.34796	0.50740
	20	13 39 29.45	1 11 1.7	0.34855	0.50758
	21	13 38 42.72	1 17 31.8	0.34919	0.50776
	22	13 37 56.28	1 23 54.8	0.34989	0.50794
	23	13 37 10.16	1 30 10.2	0.35064	0.50811
	24	13 36 24.40	1 36 17.8	0.35144	0.50829
	25	13 35 39.04	1 42 17.5	0.35230	0.50847
	26	13 34 54.13	1 48 9.1	0.35321	0.50864
	27	13 34 9.70	1 53 52.2	0.35417	0.50882
	28	13 33 25.79	1 59 26.7	0.35519	0.50899
	29	13 32 42.45	2 4 52.4	0.35625	0.50916
	30	13 31 59.70	2 10 9.2	0.35736	0.50933
May	1	13 31 17.59	2 15 16.8	0.35852	0.50950
	2	13 30 36.16	2 20 15.1	0.35973	0.50967
	3	13 29 55.44	2 25 3.9	0.36098	0.50984
	4	13 29 15.46	2 29 43.3	0.36228	0.51001
	5	13 28 36.35	2 34 12.2	0.36362	0.51018
	6	13 27 58.09	2 38 31.1	0.36501	0.51034
	7	13 27 20.60	2 42 39.7	0.36644	0.51051
	8	13 26 43.90	2 46 38.3	0.36792	0.51068
	9	13 26 8.01	2 50 26.6	0.36945	0.51084
	10	13 25 32.92	2 54 4.9	0.37101	0.51100
	11	13 24 58.66	2 57 32.9	0.37262	0.51116
	12	13 24 25.28	3 0 50.7	0.37427	0.51132
	13	13 23 52.89	N.3 3 58.3	0.37596	0.51148

MEAN TIME.

Date.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1837.	^h ^m	[°] [']		^h ^m	[°] [']	[°] [']	
Jan. 1	21 45.0	S. 5 28	0.5860	3 0.8	339 16	N. 9 4	0.5122
5	21 49.8	5 25	0.5902	2 49.9	339 47	8 44	0.5114
9	21 54.7	5 21	0.5941	2 39.1	340 17	8 24	0.5106
13	21 59.7	5 15	0.5976	2 28.4	340 48	8 4	0.5098
17	22 4.8	5 9	0.6009	2 17.8	341 18	7 43	0.5090
21	22 9.9	5 1	0.6039	2 7.2	341 49	7 23	0.5081
25	22 15.1	4 53	0.6066	1 56.5	342 20	7 2	0.5073
29	22 20.3	4 43	0.6090	1 45.9	342 51	6 41	0.5064
Feb. 2	22 25.5	4 32	0.6110	1 35.5	343 22	6 20	0.5056
6	22 30.8	4 19	0.6129	1 25.0	343 54	5 59	0.5047
10	22 36.1	4 7	0.6144	1 14.5	344 25	5 38	0.5038
14	22 41.5	3 53	0.6155	1 4.2	344 57	5 16	0.5029
18	22 46.8	3 40	0.6164	0 53.7	345 28	4 55	0.5020
22	22 52.3	3 25	0.6170	0 43.5	346 0	4 33	0.5010
26	22 57.7	3 10	0.6173	0 33.1	346 31	4 12	0.5001
Mar. 2	23 3.2	2 54	0.6173	0 22.9	347 3	3 50	0.4991
6	23 8.6	2 39	0.6169	0 12.5	347 34	3 29	0.4981
10	23 14.1	2 22	0.6164	{ 0 2.2 } [23 59.7]	348 6	3 7	0.4971
14	23 19.5	2 6	0.6155	23 49.4	348 38	2 45	0.4961
18	23 25.0	1 49	0.6142	23 39.1	349 10	2 23	0.4951
22	23 30.4	1 32	0.6128	23 28.7	349 42	2 1	0.4941
26	23 35.9	1 15	0.6109	23 18.5	350 15	1 38	0.4930
30	23 41.4	0 58	0.6088	23 8.2	350 47	1 16	0.4920
April 3	23 46.9	0 41	0.6064	22 58.0	351 20	0 53	0.4909
7	23 52.3	0 24	0.6037	22 47.6	351 53	0 31	0.4898
11	23 57.8	S. 0 8	0.6007	22 37.4	352 26	N. 0 8	0.4887
15	0 3.2	N. 0 8	0.5973	22 27.0	352 59	S. 0 15	0.4876
19	0 8.7			22 16.7	353 33	0 38	0.4864
23	0 14.2			22 6.5	354 6	1 1	0.4853
27				21 56.1	354 40	1 25	0.4841
May 1				15.7	355 13	1 48	0.4830
5					355 48	S. 2 12	0.4818

MEAN TIME.

Date.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1837.	^h ^m	[°] [']		^h ^m	[°] [']	[°] [']	
May 5	0 30.2	N. 1 21	0.5766	21 35.3	355 48	S. 2 12	0.4818
9	0 35.5	1 32	0.5715	21 24.8	356 22	2 35	0.4806
13	0 40.8	1 43	0.5662	21 14.3	356 57	2 59	0.4794
17	0 46.1	1 54	0.5606	21 3.8	357 32	3 23	0.4781
21	0 51.3	2 3	0.5545	20 53.3	358 7	3 47	0.4768
25	0 56.4	2 12	0.5483	20 42.7	358 42	4 11	0.4755
29	1 1.5	2 19	0.5418	20 32.0	359 18	4 36	0.4743
June 2	1 6.6	2 25	0.5349	20 21.4	359 53	5 0	0.4731
6	1 11.7	2 28	0.5278	20 10.6	0 29	5 24	0.4718
10	1 16.7	2 31	0.5203	19 59.8	1 6	5 48	0.4705
14	1 21.6	2 32	0.5126	19 48.9	1 43	6 13	0.4691
18	1 26.4	2 31	0.5046	19 38.0	2 20	6 38	0.4678
22	1 31.1	2 27	0.4962	19 26.9	2 57	7 3	0.4664
26	1 35.8	2 22	0.4877	19 15.8	3 34	7 28	0.4651
30	1 40.4	2 15	0.4788	19 4.8	4 12	7 53	0.4637
July 4	1 44.7	2 6	0.4696	18 53.3	4 50	8 18	0.4624
8	1 49.0	1 53	0.4602	18 41.8	5 29	8 44	0.4610
12	1 53.2	1 39	0.4506	18 30.2	6 7	9 9	0.4596
16	1 57.3	1 22	0.4406	18 18.5	6 46	9 35	0.4581
20	2 1.2	1 1	0.4305	18 6.6	7 25	10 0	0.4567
24	2 4.9	0 37	0.4202	17 54.5	8 5	10 26	0.4552
28	2 8.4	N. 0 11	0.4097	17 42.3	8 45	10 52	0.4538
Aug. 1	2 11.7	S. 0 19	0.3990	17 29.7	9 26	11 18	0.4523
5	2 14.9	0 52	0.3883	17 17.1	10 7	11 43	0.4509
9	2 17.8	1 29	0.3774	17 4.4	10 49	12 9	0.4494
13	2 20.4	2 9	0.3665	16 51.1	11 30	12 35	0.4479
17	2 22.8	2 53	0.3555	16 37.7	12 13	13 2	0.4464
21	2 24.7	3 40	0.3446	16 23.8	12 55	13 28	0.4449
25	2 26.5	4 32	0.3338	16 9.8	13 38	13 55	0.4433
29	2 27.9	5 27	0.3233	15 55.5	14 22	14 21	0.4418
Sept. 2	2 29.0	6 27	0.3130	15 40.7	15 7	14 48	0.4402
6	2 29.8	S. 7 28	0.3030	15 25.8	15 51	S. 15 14	0.4386

MEAN TIME.

Date.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1837.	^h ^m	[°] [']		^h ^m	[°] [']	[°] [']	
Sept. 6	2 29.8	S. 7 28	0.3030	15 25.8	15 51	S. 15 14	0.4386
10	2 30.1	8 33	0.2934	15 10.3	16 37	15 41	0.4370
14	2 29.9	9 41	0.2844	14 54.4	17 22	16 7	0.4355
18	2 29.5	10 52	0.2759	14 38.2	18 8	16 34	0.4339
22	2 28.7	12 2	0.2682	14 21.7	18 54	17 0	0.4322
26	2 27.5	13 16	0.2612	14 4.6	19 42	17 27	0.4306
30	2 25.9	14 29	0.2551	13 47.2	20 29	17 53	0.4290
Oct. 4	2 23.9	15 43	0.2498	13 29.5	21 18	18 20	0.4273
8	2 21.6	16 54	0.2458	13 11.4	22 7	18 47	0.4257
12	2 19.0	18 4	0.2426	12 53.0	22 57	19 14	0.4240
16	2 16.1	19 10	0.2406	12 34.5	23 47	19 40	0.4224
20	2 13.1	20 13	0.2396	12 15.7	24 38	20 7	0.4207
24	2 10.0	21 11	0.2395	11 56.8	25 30	20 33	0.4191
28	2 6.7	22 4	0.2406	11 37.8	26 23	21 0	0.4174
Nov. 1	2 3.4	22 51	0.2426	11 18.8	27 16	21 26	0.4157
5	2 0.2	23 32	0.2456	11 0.0	28 10	21 52	0.4140
9	1 57.1	24 7	0.2493	10 41.3	29 4	22 18	0.4123
13	1 54.4	24 35	0.2538	10 22.9	30 0	22 44	0.4105
17	1 51.7	24 56	0.2590	10 4.5	30 56	23 10	0.4088
21	1 49.3	25 12	0.2648	9 46.5	31 53	23 36	0.4071
25	1 47.4	25 22	0.2709	9 28.8	32 51	24 2	0.4054
29	1 45.8	25 25	0.2775	9 11.6	33 50	24 28	0.4036
Dec. 3	1 44.6	25 23	0.2844	8 54.5	34 50	24 53	0.4019
7	1 43.8	25 16	0.2916	8 38.0	35 51	25 18	0.4002
11	1 43.5	25 5	0.2988	8 22.0	36 51	25 43	0.3985
15	1 43.5	24 49	0.3062	8 6.5	37 54	26 8	0.3967
19	1 44.0	24 29	0.3135	7 51.2	38 57	26 38	0.3950
23	1 45.0	24 7	0.3209	7 36.6	40 2	27 8	0.3932
27	1 46.3	23 40	0.3283	7 22.1	41 7	27 38	0.3914
31	1 48.0	23 11	0.3356	7 7.6	42 12	28 8	0.3896
35	1 50.1	S. 22 39	0.3429	6 53.1	43 20	28 58	0.3878

EPHEMERIS OF PALLAS FOR THE OPPOSITION.

At Greenwich Mean Midnight.

Date.	Right Ascension.	Declination.	Logarithm of the Distance from the	
			Earth.	Sun.
1837.	^h ^m ^s	[°] ['] ["]		
September 17	2 29 38.97	S. 10 41 31.2	0.27697	0.43405
18	2 29 29.38	10 59 18.3	0.27493	0.43365
19	2 29 18.33	11 17 11.5	0.27294	0.43325
20	2 29 5.80	11 35 10.4	0.27101	0.43285
21	2 28 51.81	11 53 14.5	0.26911	0.43244
22	2 28 36.34	12 11 23.1	0.26726	0.43203
23	2 28 19.41	12 29 35.6	0.26546	0.43163
24	2 28 1.01	12 47 51.6	0.26372	0.43122
25	2 27 41.16	13 6 10.3	0.26202	0.43082
26	2 27 19.87	13 24 31.0	0.26037	0.43041
27	2 26 57.13	13 42 53.0	0.25878	0.43000
28	2 26 32.97	14 1 15.6	0.25725	0.42960
29	2 26 7.43	14 19 37.7	0.25578	0.42919
30	2 25 40.51	14 37 58.7	0.25436	0.42878
October 1	2 25 12.24	14 56 17.7	0.25301	0.42837
2	2 24 42.65	15 14 33.9	0.25171	0.42796
3	2 24 11.77	15 32 46.7	0.25047	0.42755
4	2 23 39.65	15 50 54.9	0.24930	0.42714
5	2 23 6.30	16 8 57.9	0.24819	0.42673
6	2 22 31.76	16 26 54.9	0.24714	0.42632
7	2 21 56.06	16 44 45.0	0.24616	0.42591
8	2 21 19.24	17 2 27.5	0.24523	0.42549
9	2 20 41.33	17 20 1.2	0.24439	0.42508
10	2 20 2.38	17 37 25.7	0.24360	0.42466
11	2 19 22.44	17 54 40.3	0.24288	0.42425
12	2 18 41.55	18 11 43.9	0.24222	0.42383
13	2 17 59.73	18 28 35.9	0.24164	0.42342
14	2 17 17.05	18 45 15.4	0.24111	0.42300
15	2 16 33.54	19 1 41.9	0.24062	0.42258
16	2 15 49.28	19 17 54.3		
8 17	2 15 4.29	S. 19 33 52.1		

EPHEMERIS OF PALLAS FOR THE OPPOSITION.

At Greenwich Mean Midnight.

Date.	Right Ascension.	Declination.	Logarithm of the Distance from the	
			Earth.	Sun.
1837.	^h ^m ^s	[°] ['] ["]		
October 17	2 15 4.29	S. 19 33 52.1	0.23994	0.42175
18	2 14 18.63	19 49 34.5	0.23969	0.42133
19	2 13 32.35	20 5 0.9	0.23949	0.42091
20	2 12 45.52	20 20 10.4	0.23938	0.42049
21	2 11 58.20	20 35 2.4	0.23932	0.42007
22	2 11 10.42	20 49 36.3	0.23932	0.41965
23	2 10 22.27	21 3 51.4	0.23940	0.41923
24	2 9 33.81	21 17 47.1	0.23953	0.41881
25	2 8 45.08	21 31 22.9	0.23973	0.41839
26	2 7 56.17	21 44 38.1	0.24000	0.41797
27	2 7 7.13	21 57 32.3	0.24032	0.41755
28	2 6 18.05	22 10 5.0	0.24071	0.41713
29	2 5 28.97	22 22 15.7	0.24116	0.41670
30	2 4 39.97	22 34 4.0	0.24167	0.41627
31	2 3 51.12	22 45 29.6	0.24224	0.41585
November 1	2 3 2.49	22 56 32.0	0.24286	0.41543
2	2 2 14.13	23 7 11.2	0.24354	0.41500
3	2 1 26.12	23 17 26.6	0.24428	0.41458
4	2 0 38.51	23 27 18.4	0.24507	0.41416
5	1 59 51.38	23 36 46.1	0.24591	0.41373
6	1 59 4.79	23 45 49.7	0.24681	0.41330
7	1 58 18.78	23 54 29.2	0.24775	0.41288
8	1 57 33.42	24 2 44.4	0.24874	0.41245
9	1 56 48.81	24 10 35.7	0.24978	0.41202
10	1 56 4.98	24 18 3.0	0.25086	0.41159
11	1 55 21.98	24 25 6.1	0.25199	0.41117
12	1 54 39.85	24 31 45.1	0.25315	0.41074
13	1 53 58.62	24 37 59.8	0.25437	0.41031
14	1 53 18.32	24 43 50.1	0.25562	0.40989
15	1 52 38.97	24 49 15.8	0.25691	0.40946
	1 52 0.57	S. 24 54 16.8	0.25824	0.40903

MEAN TIME.

Date.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad. V
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1837.	^h ^m	[°] [']		^h ^m	[°] [']	[°] [']	
Jan. 1	23 34.5	S. 13 4	0.4985	4 50.1	7 20	S. 10 11	0.46
5	23 38.5	12 25	0.5052	4 38.4	8 6	10 8	0.46
9	23 42.7	11 47	0.5117	4 26.9	8 54	10 6	0.46
13	23 47.1	11 7	0.5180	4 15.5	9 39	10 3	0.46
17	23 51.6	10 28	0.5239	4 4.3	10 25	10 1	0.46
21	23 56.1	9 46	0.5296	3 53.0	11 12	9 58	0.46
25	0 0.8	9 6	0.5351	3 41.9	11 58	9 55	0.46
29	0 5.6	8 25	0.5402	3 31.0	12 45	9 52	0.46
Feb. 2	0 10.5	7 44	0.5451	3 20.3	13 31	9 49	0.46
6	0 15.5	7 2	0.5497	3 9.5	14 18	9 45	0.46
10	0 20.5	6 21	0.5540	2 58.7	15 4	9 42	0.46
14	0 25.7	5 39	0.5581	2 48.2	15 52	9 38	0.46
18	0 31.0	4 57	0.5619	2 37.7	16 39	9 35	0.46
22	0 36.3	4 15	0.5654	2 27.2	17 26	9 31	0.46
26	0 41.6	3 33	0.5687	2 16.8	18 13	9 27	0.46
Mar. 2	0 47.0	2 51	0.5717	2 6.5	19 0	9 23	0.46
6	0 52.5	2 10	0.5744	1 56.2	19 47	9 19	0.46
10	0 58.0	1 28	0.5769	1 46.0	20 35	9 14	0.46
14	1 3.5	0 47	0.5791	1 35.8	21 22	9 9	0.46
18	1 9.1	S. 0 6	0.5810	1 25.7	22 9	9 4	0.46
22	1 14.8	N. 0 35	0.5827	1 15.6	22 56	9 0	0.46
26	1 20.5	1 16	0.5841	1 5.6	23 44	8 55	0.46
30	1 26.3	1 56	0.5852	0 55.6	24 31	8 51	0.43
Apr. 3	1 32.1	2 36	0.5861	0 45.6	25 19	8 46	0.43
7	1 37.9	3 16	0.5868	0 35.7	26 6	8 41	0.41
11	1 43.7	3 55	0.5871	0 25.8	26 54	8 36	0.41
15	1 49.6	4 33	0.5873	0 15.9	27 42	8 31	0.41
19	1 55.5	5 11	0.5872	0 6.0	28 30	8 26	0.41
23	2 1.5	5 48	0.5868	* 23 53.7			
27	2 7.5	6 25	0.5862	23 43.9			
May 1	2 13.5	7 0	0.5854	23 34.2			
5	2 19.5	N. 7 35	0.5843	23 24.5			

MEAN TIME.

Date,	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1837.	^{h m}	^{° ′}		^{h m}	^{° ′}	^{° ′}	
May 5	2 19.5	N. 7 35	0.5843	23 24.5	31 41	S. 8 3	0.4559
9	2 25.5	8 10	0.5830	23 14.7	32 29	7 58	0.4555
13	2 31.6	8 44	0.5814	23 5.1	33 17	7 52	0.4550
17	2 37.6	9 17	0.5795	22 55.3	34 6	7 46	0.4546
21	2 43.7	9 49	0.5774	22 45.7	34 55	7 39	0.4541
25	2 49.7	10 21	0.5752	22 35.9	35 44	7 33	0.4537
29	2 55.8	10 51	0.5726	22 26.2	36 32	7 26	0.4532
June 2	3 1.8	11 21	0.5698	22 16.6	37 21	7 20	0.4528
6	3 7.9	11 50	0.5667	22 6.9	38 9	7 13	0.4523
10	3 13.9	12 17	0.5635	21 57.1	38 58	7 7	0.4518
14	3 19.9	12 44	0.5598	21 47.3	39 47	7 0	0.4514
18	3 25.9	13 10	0.5560	21 37.6	40 36	6 53	0.4509
22	3 31.9	13 35	0.5519	21 27.9	41 26	6 46	0.4504
26	3 37.8	14 0	0.5476	21 18.1	42 15	6 39	0.4499
30	3 43.8	14 23	0.5430	21 8.3	43 4	6 32	0.4494
July 4	3 49.7	14 45	0.5382	20 58.5	43 53	6 25	0.4490
8	3 55.5	15 6	0.5330	20 48.5	44 43	6 17	0.4485
12	4 1.3	15 25	0.5277	20 38.4	45 32	6 10	0.4480
16	4 7.1	15 44	0.5221	20 28.4	46 22	6 2	0.4475
20	4 12.8	16 3	0.5162	20 18.3	47 12	5 54	0.4470
24	4 18.3	16 20	0.5100	20 8.0	48 2	5 47	0.4465
28	4 23.9	16 36	0.5037	19 57.9	48 51	5 40	0.4460
Aug. 1	4 29.4	16 51	0.4969	19 47.6	49 41	5 32	0.4455
5	4 34.7	17 6	0.4900	19 37.1	50 31	5 24	0.4450
9	4 39.9	17 20	0.4827	19 26.7	51 22	5 16	0.4445
13	4 45.0	17 32	0.4752	19 15.9	52 12	5 7	0.4440
17	4 49.9	17 44	0.4674	19 5.0	53 2	4 59	0.4435
21	4 54.7	17 55	0.4595	18 53.9	53 52	4 51	0.4430
	4 59.4	18 5	0.4511	18 42.9	54 43	4 43	0.4425
	3.8	18 15	0.4426	18 31.6	55 33	4 34	0.4420
	3.1	18 24	0.4338	18 20.0	56 24	4 26	0.4414
		N. 18 33	0.4247	18 8.4	57 15	S. 4 17	0.4409

MEAN TIME.

Date.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1837.							
Sept. 6	^h 5 ^m 12 ^s 2	N. 18 33	0 4247	^h 18 ^m 8 ^s 4	^o 57 ⁱ 15	S. 4 17	0 4409
10	5 16 1	18 41	0 4154	17 56 5	58 6	4 8	0 4404
14	5 19 6	18 49	0 4059	17 44 3	58 57	3 59	0 4399
18	5 23 0	18 57	0 3962	17 31 9	59 48	3 50	0 4394
22	5 26 0	19 4	0 3862	17 19 1	60 39	3 41	0 4389
26	5 28 7	19 11	0 3760	17 5 9	61 31	3 32	0 4384
30	5 31 2	19 18	0 3659	16 52 6	62 22	3 23	0 4378
Oct. 4	5 33 2	19 25	0 3555	16 38 8	63 13	3 14	0 4373
8	5 34 9	19 32	0 3452	16 24 7	64 4	3 5	0 4368
12	5 36 2	19 40	0 3348	16 10 3	64 56	2 55	0 4363
16	5 37 1	19 47	0 3245	15 55 4	65 49	2 46	0 4358
20	5 37 5	19 55	0 3141	15 39 9	66 41	2 36	0 4352
24	5 37 6	20 3	0 3042	15 24 2	67 33	2 27	0 4347
28	5 37 1	20 11	0 2943	15 8 0	68 25	2 17	0 4342
Nov. 1	5 36 2	20 20	0 2848	14 51 4	69 18	2 8	0 4337
5	5 34 9	20 30	0 2756	14 34 2	70 10	1 58	0 4332
9	5 33 1	20 40	0 2673	14 16 6	71 3	1 49	0 4327
13	5 30 9	20 50	0 2593	13 58 6	71 56	1 39	0 4321
17	5 28 1	21 0	0 2523	13 40 0	72 49	1 30	0 4316
21	5 25 0	21 11	0 2460	13 21 2	73 42	1 20	0 4311
25	5 21 6	21 22	0 2406	13 2 2	74 35	1 10	0 4306
29	5 17 9	21 33	0 2363	12 42 6	75 28	1 0	0 4301
Dec. 3	5 14 0	21 44	0 2331	12 23 0	76 21	0 50	0 4296
7	5 9 9	21 55	0 2311	12 3 1	77 15	0 40	0 4291
11	5 5 8	22 5	0 2302	11 43 4	78 9	0 30	0 4286
15	5 1 6	22 16	0 2307	11 23 5	79 3	0 20	0 4281
19	4 57 5	22 26	0 2321	11 3 7	79 56	S. 0 10	0 4276
23	4 53 7	22 36	0 2349	10 44 3	80 50	0 0	0 4271
27	4 50 0	22 45	0 2386	10 24 8	81 43	N. 0	
31	4 46 6	22 55	0 2433	10 5 6	82 38	0	
35	4 43 5	N. 23 5	0 2493	9 46 6	83 32	N	

EPHEMERIS OF CERES FOR THE OPPOSITION.

At Greenwich Mean Midnight.

Date.	Right Ascension.	Declination.	Logarithm of the Distance from the	
			Earth.	Sun.
1837.	^h ^m ^s	[°] ['] ["]		
November 9	5 32 50.53	N.20 40 59.3	0.26622	0.43261
10	5 32 18.28	20 43 31.6	0.26421	0.43248
11	5 31 44.38	20 46 5.1	0.26224	0.43235
12	5 31 8.88	20 48 39.9	0.26032	0.43222
13	5 30 31.77	20 51 15.8	0.25843	0.43209
14	5 29 53.11	20 53 52.9	0.25660	0.43196
15	5 29 12.90	20 56 31.2	0.25482	0.43183
16	5 28 31.16	20 59 10.3	0.25308	0.43171
17	5 27 47.95	21 1 50.4	0.25139	0.43158
18	5 27 3.28	21 4 31.4	0.24976	0.43145
19	5 26 17.20	21 7 13.1	0.24818	0.43132
20	5 25 29.75	21 9 55.3	0.24666	0.43119
21	5 24 40.95	21 12 38.0	0.24521	0.43107
22	5 23 50.87	21 15 21.3	0.24381	0.43094
23	5 22 59.53	21 18 4.9	0.24247	0.43081
24	5 22 7.00	21 20 48.8	0.24119	0.43068
25	5 21 13.36	21 23 32.9	0.23998	0.43055
26	5 20 18.63	21 26 17.2	0.23883	0.43043
27	5 19 22.88	21 29 1.5	0.23775	0.43030
28	5 18 26.19	21 31 45.7	0.23674	0.43017
29	5 17 28.62	21 34 29.8	0.23580	0.43004
30	5 16 30.23	21 37 13.8	0.23492	0.42992
December 1	5 15 31.09	21 39 57.5	0.23412	0.42979
2	5 14 31.28	21 42 40.8	0.23339	0.42966
3	5 13 30.87	21 45 23.7	0.23274	0.42954
4	5 12 29.91	21 48 6.2	0.23215	0.42931
5	5 11 28.50	21 50 48.0	0.23164	0.42928
6	5 10 26.70	21 53 29.2	0.23121	0.42916
7	5 9 24.59	21 56 9.8	0.23085	0.42903
8	5 8 22.26	21 58 49.6	0.23056	0.42890
9	5 7 19.53	N.22 1 28.7	0.23035	0.42878

EPHEMERIS OF CERES FOR THE OPPOSITION.

At Greenwich Mean Midnight.

Date.	Right Ascension.	Declination.	Logarithm of the Distance from the	
			Earth.	Sun.
1837.	^h ^m ^s	[°] ['] ["]		
December 9	5 7 19.75	N.22 1 28.7	0.23035	0.42878
10	5 6 17.16	22 4 7.0	0.23021	0.42865
11	5 5 14.55	22 6 44.3	0.23015	0.42852
12	5 4 12.02	22 9 20.9	0.23017	0.42840
13	5 3 9.61	22 11 56.5	0.23025	0.42827
14	5 2 7.41	22 14 31.2	0.23042	0.42815
15	5 1 5.52	22 17 4.9	0.23066	0.42802
16	5 0 3.97	22 19 37.7	0.23097	0.42790
17	4 59 2.85	22 22 9.6	0.23135	0.42777
18	4 58 2.24	22 24 40.6	0.23181	0.42765
19	4 57 2.21	22 27 10.8	0.23235	0.42752
20	4 56 2.83	22 29 40.1	0.23295	0.42740
21	4 55 4.18	22 32 8.7	0.23363	0.42727
22	4 54 6.30	22 34 36.4	0.23437	0.42715
23	4 53 9.31	22 37 3.5	0.23519	0.42702
24	4 52 13.25	22 39 30.0	0.23607	0.42690
25	4 51 18.18	22 41 55.9	0.23702	0.42677
26	4 50 24.18	22 44 21.2	0.23804	0.42665
27	4 49 31.30	22 46 46.1	0.23912	0.42653
28	4 48 39.62	22 49 10.5	0.24027	0.42640
29	4 47 49.17	22 51 34.7	0.24148	0.42628
30	4 47 0.02	22 53 58.8	0.24275	0.42616
31	4 46 12.22	22 56 22.8	0.24407	0.42603
1838.				
January 1	4 45 25.81	22 58 46.7	0.24546	0.42591
2	4 44 40.85	23 1 10.7	0.24690	0.42579
3	4 43 57.39	23 3 34.8	0.24840	0.42567
4	4 43 15.47	23 5 59.0	0.24995	0.42554
5	4 42 35.11	23 8 23.4	0.25155	0.42542
6	4 41 56.36	23 10 47.9	0.25320	0.42530
7	4 41 19.26	23 13 12.5	0.25490	0.42518
8	4 40 43.87	N.23 15 37.4	0.25664	0.42506

JANUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	^h 9 ^m 18 ^s 12.76	N. 16 35 13.3	0.6520895	^h 14 ^m 31.9	^o 130 36 45.1	N. 0 41 34.5	0.7256117
2	9 17 51.79	16 37 2.4	.6512163	14 27.6	130 41 31.3	0 41 40.1	.7256380
3	9 17 30.19	16 38 54.2	.6503657	14 23.3	130 46 17.5	0 41 45.6	.7256642
4	9 17 7.97	16 40 48.4	.6495384	14 19.0	130 51 3.7	0 41 51.2	.7256904
5	9 16 45.15	16 42 45.1	.6487350	14 14.7	130 55 49.8	0 41 56.7	.7257166
6	9 16 21.75	16 44 44.1	.6479558	14 10.4	131 0 35.9	0 42 2.3	.7257428
7	9 15 57.77	16 46 45.3	.6472016	14 6.0	131 5 21.9	0 42 7.8	.7257690
8	9 15 33.24	16 48 48.7	.6464729	14 1.7	131 10 7.9	0 42 13.3	.7257951
9	9 15 8.17	16 50 54.2	.6457699	13 57.3	131 14 53.9	0 42 18.9	.7258212
10	9 14 42.57	16 53 1.6	.6450933	13 52.9	131 19 39.9	0 42 24.4	.7258473
11	9 14 16.47	16 55 10.8	.6444434	13 48.6	131 24 25.8	0 42 29.9	.7258734
12	9 13 49.89	16 57 21.8	.6438209	13 44.2	131 29 11.7	0 42 35.4	.7258994
13	9 13 22.85	16 59 34.5	.6432260	13 39.8	131 33 57.5	0 42 40.9	.7259255
14	9 12 55.36	17 1 48.7	.6426588	13 35.4	131 38 43.3	0 42 46.4	.7259515
15	9 12 27.44	17 4 4.3	.6421199	13 31.0	131 43 29.1	0 42 51.9	.7259775
16	9 11 59.11	17 6 21.3	.6416095	13 26.6	131 48 14.9	0 42 57.4	.7260034
17	9 11 30.40	17 8 39.5	.6411282	13 22.2	131 53 0.6	0 43 2.9	.7260294
18	9 11 1.32	17 10 58.8	.6406762	13 17.8	131 57 46.3	0 43 8.3	.7260553
19	9 10 31.90	17 13 19.1	.6402538	13 13.4	132 2 31.9	0 43 13.8	.7260812
20	9 10 2.15	17 15 40.4	.6398609	13 9.0	132 7 17.5	0 43 19.3	.7261070
21	9 9 32.09	17 18 2.5	.6394980	13 4.5	132 12 3.1	0 43 24.7	.7261329
22	9 9 1.75	17 20 25.2	.6391654	13 0.1	132 16 48.6	0 43 30.2	
23	9 8 31.14	17 22 48.6	.6388633	12 55.7	132 21 34.1	0 43 35.7	
24	9 8 0.29	17 25 12.5	.6385920	12 51.2	132 26 19.6	0 43 41.2	
25	9 7 29.22	17 27 36.8	.6383517	12 46.8	132 31 5.0	0 43 46.7	
26	9 6 57.94	17 30 1.3	.6381423	12 42.3	132 35 50.4	0 43 52.2	
27	9 6 26.49	17 32 26.0	.6379640	12 37.9	132 40 35.7	0 43 57.7	
28	9 5 54.88	17 34 50.8	.6378172	12 33.4	132 45 21.0	0 44 3.2	
29	9 5 23.14	17 37 15.5	.6377018	12 28.9	132 50 6.3	0 44 8.7	
30	9 4 51.29	17 39 40.1	.6376182	12 24.5	132 54 51.6	0 44 14.2	
31	9 4 19.36	17 42 4.4	.6375664	12 20.0	132 59 36.9	0 44 19.7	
32	9 3 47.36	N. 17 44 28.4	0.6375464	12 15.6	133 4 22.2	0 44 25.2	

FEBRUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vel.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	9 3 47.36	N. 17 44 28.4	0.6375464	12 15.6	133 4 22.0	N. 0 44 24.4	0.72641
2	9 3 15.33	17 46 51.9	.6375581	12 11.1	133 9 7.1	0 44 29.8	.72644
3	9 2 43.29	17 49 14.8	.6376018	12 6.7	133 13 52.2	0 44 35.1	.72646
4	9 2 11.27	17 51 37.0	.6376773	12 2.2	133 18 37.3	0 44 40.5	.72649
5	9 1 39.28	17 53 58.5	.6377847	11 57.7	133 23 22.3	0 44 45.9	.72651
6	9 1 7.36	17 56 19.1	.6379240	11 53.3	133 28 7.3	0 44 51.3	.72654
7	9 0 35.53	17 58 38.7	.6380947	11 48.8	133 32 52.3	0 44 56.6	.72656
8	9 0 3.82	18 0 57.2	.6382969	11 44.4	133 37 37.3	0 45 2.0	.72659
9	8 59 32.24	18 3 14.4	.6385304	11 39.9	133 42 22.2	0 45 7.3	.72661
10	8 59 0.83	18 5 30.4	.6387951	11 35.5	133 47 7.0	0 45 12.7	.72664
11	8 58 29.60	18 7 45.0	.6390909	11 31.0	133 51 51.9	0 45 18.0	.72666
12	8 57 58.59	18 9 58.1	.6394176	11 26.6	133 56 36.7	0 45 23.3	.72669
13	8 57 27.81	18 12 9.6	.6397741	11 22.1	134 1 21.4	0 45 28.6	.72672
14	8 56 57.28	18 14 19.4	.6401607	11 17.7	134 6 6.1	0 45 34.0	.72674
15	8 56 27.02	18 16 27.5	.6405771	11 13.3	134 10 50.8	0 45 39.3	.72677
16	8 55 57.06	18 18 33.8	.6410231	11 8.8	134 15 35.5	0 45 44.6	.72679
17	8 55 27.43	18 20 38.2	.6414984	11 4.4	134 20 20.1	0 45 49.9	.72682
18	8 54 58.14	18 22 40.6	.6420027	11 0.0	134 25 4.7	0 45 55.2	.72684
19	8 54 29.21	18 24 41.0	.6425353	10 55.6	134 29 49.2	0 46 0.5	.72687
20	8 54 0.66	18 26 39.3	.6430960	10 51.2	134 34 33.7	0 46 5.8	.72689
21	8 53 32.51	18 28 35.5	.6436845	10 46.8	134 39 18.2	0 46 11.1	.72692
22	8 53 4.78	18 30 29.5	.6443004	10 42.4	134 44 2.7	0 46 16.4	.72694
23	8 52 37.48	18 32 21.2	.6449435	10 38.0	134 48 47.1	0 46 21.6	.72697
24	8 52 10.63	18 34 10.5	.6456133	10 33.6	134 53 31.5	0 46 26.9	.72699
25	8 51 44.25	18 35 57.5	.6463090	10 29.3	134 58 15.8	0 46 32.2	.72702
26	8 51 18.36	18 37 42.0	.6470305	10 24.9	135 3 0.1	0 46 37.4	.72704
27	8 50 52.98	18 39 24.0	.6477773	10 20.6	135 7 44.4	0 46 42.7	.72707
28	8 50 28.12	18 41 3.5	.6485490	10 16.2	135 12 28.7	0 46 47.9	.72709
29	8 50 3.80	N. 18 42 40.5	0.6493452	10 11.9	135 17 12.9	N. 0 46 53.1	0.72712

MARCH, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	8 50 3'80	N. 18 42 40'5	0'6493452	10 11'9	135 17 12'9	N. 0 46 53'1	0'7271216
2	8 49 40'03	18 44 14'8	'6501655	10 7'6	135 21 57'1	0 46 58'3	'7271465
3	8 49 16'84	18 45 46'5	'6510093	10 3'2	135 26 41'2	0 47 3'5	'7271714
4	8 48 54'23	18 47 15'4	'6518762	9 58'9	135 31 25'3	0 47 8'8	'7271962
5	8 48 32'23	18 48 41'6	'6527655	9 54'7	135 36 9'4	0 47 14'0	'7272210
6	8 48 10'85	18 50 5'0	'6536769	9 50'4	135 40 53'4	0 47 19'2	'7272458
7	8 47 50'10	18 51 25'6	'6546100	9 46'1	135 45 37'4	0 47 24'4	'7272705
8	8 47 30'00	18 52 43'3	'6555640	9 41'9	135 50 21'4	0 47 29'6	'7272952
9	8 47 10'56	18 53 58'1	'6565380	9 37'6	135 55 5'4	0 47 34'8	'7273199
10	8 46 51'79	18 55 9'9	'6575318	9 33'4	135 59 49'3	0 47 40'0	'7273446
11	8 46 33'70	18 56 18'8	'6585447	9 29'1	136 4 33'2	0 47 45'2	'7273693
12	8 46 16'30	18 57 24'8	'6595762	9 24'9	136 9 17'0	0 47 50'3	'7273939
13	8 45 59'60	18 58 27'7	'6606259	9 20'7	136 14 0'8	0 47 55'5	'7274185
14	8 45 43'61	18 59 27'6	'6616930	9 16'5	136 18 44'6	0 48 0'6	'7274431
15	8 45 28'34	19 0 24'5	'6627766	9 12'4	136 23 28'3	0 48 5'7	'7274676
16	8 45 13'79	19 1 18'4	'6638764	9 8'2	136 28 12'0	0 48 10'9	'7274922
17	8 44 59'96	19 2 9'2	'6649919	9 4'0	136 32 55'7	0 48 16'0	'7275167
18	8 44 46'87	19 2 56'9	'6661224	8 59'9	136 37 39'4	0 48 21'1	'7275411
19	8 44 34'53	19 3 41'6	'6672675	8 55'8	136 42 23'0	0 48 26'3	'7275656
20	8 44 22'93	19 4 23'3	'6684265	8 51'6	136 47 6'6	0 48 31'4	'7275900
21	8 44 12'08	19 5 1'9	'6695989	8 47'5	136 51 50'1	0 48 36'5	'7276144
22	8 44 1'98	19 5 37'4	'6707842	8 43'5	136 56 33'6	0 48 41'6	'7276388
23	8 43 52'64	19 6 9'9	'6719819	8 39'	137 0 17'1	0 48 46'7	'7276631
24	8 43 44'05	19 6 39'4	'6731914	8 35'	137 4 50'6	0 48 51'8	'7276874
25	8 43 36'23	19 7 5'8	'6744122	8 31'	137 9 23'1	0 48 56'9	'7277117
26	8 43 29'18	19 7 29'1	'6756438	8 27'	137 13 55'6	0 49 1'9	'7277360
27	8 43 22'90	19 7 49'5	'6768850	8 23'	137 18 28'1	0 49 7'0	'7277602
28	8 43 17'38	19 8 6'8	'6781371	8 19'	137 23 0'6	0 49 12'1	'7277844
29	8 43 12'64	19 8 21'1	'6793902	8 15'	137 27 33'1	0 49 17'2	'7278086
30	8 43 8'67	19 8 32'3	'6806643	8 11'	137 32 7'6	0	'7278327
31	8 43 5'48	19 8 40'4	'6819484	8 7'	137 36 42'1	0	'7278569
32	8 43 3'06	N. 19 8 45'5	0'68322				

APRIL, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log Rad.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	^h 8 ^m 43 ^s 3'06	N. [°] 19 ['] 8 ["] 45'5	0'6832337	^h 8 ^m 3'2	[°] 137 ['] 43 ["] 47'1	N. [°] 0 ['] 49 ["] 32'3	0'7279
2	8 43 1'42	19 8 47'4	'6845271	7 59'2	137 48 30'3	0 49 37'3	'7279
3	8 43 0'55	19 8 46'3	'6858273	7 55'3	137 53 13'4	0 49 42'4	'7279
4	8 43 0'47	19 8 42'2	'6871338	7 51'3	137 57 56'5	0 49 47'4	'7279
5	8 43 1'16	19 8 35'1	'6884461	7 47'4	138 2 39'6	0 49 52'4	'7279
6	8 43 2'62	19 8 25'0	'6897636	7 43'5	138 7 22'7	0 49 57'4	'7280
7	8 43 4'86	19 8 11'9	'6910859	7 39'6	138 12 5'7	0 50 2'4	'7280
8	8 43 7'88	19 7 56'0	'6924124	7 35'8	138 16 48'7	0 50 7'4	'7280
9	8 43 11'66	19 7 37'1	'6937427	7 31'9	138 21 31'7	0 50 12'4	'7280
10	8 43 16'21	19 7 15'2	'6950763	7 28'0	138 26 14'6	0 50 17'4	'7280
11	8 43 21'53	19 6 50'4	'6964127	7 24'2	138 30 57'6	0 50 22'4	'7281
12	8 43 27'60	19 6 22'7	'6977515	7 20'4	138 35 40'5	0 50 27'4	'7281
13	8 43 34'42	19 5 52'1	'6990922	7 16'6	138 40 23'3	0 50 32'3	'7281
14	8 43 41'99	19 5 18'5	'7004344	7 12'8	138 45 6'1	0 50 37'3	'7281
15	8 43 50'30	19 4 41'9	'7017777	7 9'0	138 49 48'9	0 50 42'3	'7282
16	8 43 59'34	19 4 2'5	'7031218	7 5'2	138 54 31'7	0 50 47'2	'7282
17	8 44 9'11	19 3 20'2	'7044661	7 1'4	138 59 14'5	0 50 52'2	'7282
18	8 44 19'60	19 2 35'1	'7058103	6 57'7	139 3 57'2	0 50 57'1	'7282
19	8 44 30'82	19 1 47'1	'7071539	6 53'9	139 8 39'9	0 51 2'1	'7283
20	8 44 42'75	19 0 56'4	'7084970	6 50'2	139 13 22'5	0 51 7'0	'7283
21	8 44 55'39	19 0 2'9	'7098389	6 46'5	139 18 5'2	0 51 11'9	'7283
22	8 45 8'73	18 59 6'6	'7111795	6 42'8	139 22 47'8	0 51 16'8	'7283
23	8 45 22'76	18 58 7'6	'7125182	6 39'1	139 27 30'4	0 51 21'7	'7284
24	8 45 37'49	18 57 5'8	'7138548	6 35'4	139 32 12'9	0 51 26'6	'7284
25	8 45 52'90	18 56 1'3	'7151890	6 31'7	139 36 55'4	0 51 31'5	'7284
26	8 46 8'99	18 54 54'1	'7165208	6 28'1	139 41 37'9	0 51 36'4	'7284
27	8 46 25'75	18 53 44'2	'7178496	6 24'4	139 46 20'4	0 51 41'3	'7284
28	8 46 43'18	18 52 31'6	'7191751	6 20'8	139 51 2'8	0 51 46'2	'7285
29	8 47 1'27	18 51 16'4	'7204971	6 17'1	139 55 45'2	0 51 51'1	'7285
30	8 47 20'02	18 49 58'5	'7218151	6 13'5	140 0 27'5	0 51 55'9	'7285
31	8 47 39'41	N. 18 48 37'9	0'7231289	6 9'9	140 5 9'9	N. 0 52 0'8	0'7285

JUPITER.

327

MAY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	<small>h m s</small>	<small>° ' "</small>		<small>h m</small>	<small>° ' "</small>	<small>° ' "</small>	
1	8 47 39.41	N.18 48 37.9	0.7231289	6 9.9	140 5 9.9	N.0 52 0.8	0.7285922
2	8 47 59.45	18 47 14.7	.7244381	6 6.3	140 9 52.2	0 52 5.7	.7286155
3	8 48 20.13	18 45 48.9	.7257425	6 2.7	140 14 34.5	0 52 10.5	.7286387
4	8 48 41.45	18 44 20.5	.7270417	5 59.2	140 19 16.8	0 52 15.3	.7286620
5	8 49 3.39	18 42 49.4	.7283355	5 55.6	140 23 59.0	0 52 20.2	.7286852
6	8 49 25.94	18 41 15.8	.7296236	5 52.0	140 28 41.2	0 52 25.0	.7287084
7	8 49 49.10	18 39 39.6	.7309057	5 48.5	140 33 23.4	0 52 29.8	.7287315
8	8 50 12.86	18 38 0.8	.7321816	5 45.0	140 38 5.5	0 52 34.6	.7287546
9	8 50 37.22	18 36 19.5	.7334510	5 41.4	140 42 47.6	0 52 39.4	.7287777
10	8 51 2.17	18 34 35.7	.7347136	5 37.9	140 47 29.7	0 52 44.2	.7288008
11	8 51 27.69	18 32 49.3	.7359693	5 34.4	140 52 11.8	0 52 49.0	.7288238
12	8 51 53.77	18 31 0.5	.7372178	5 30.9	140 56 53.8	0 52 53.8	.7288468
13	8 52 20.42	18 29 9.3	.7384588	5 27.4	141 1 35.8	0 52 58.6	.7288698
14	8 52 47.62	18 27 15.7	.7396922	5 23.9	141 6 17.8	0 53 3.4	.7288928
15	8 53 15.36	18 25 19.6	.7409179	5 20.5	141 10 59.7	0 53 8.1	.7289157
16	8 53 43.64	18 23 21.1	.7421356	5 17.0	141 15 41.6	0 53 12.9	.7289386
17	8 54 12.45	18 21 20.3	.7433451	5 13.6	141 20 23.5	0 53 17.6	.7289615
18	8 54 41.78	18 19 17.0	.7445462	5 10.1	141 25 5.4	0 53 22.4	.7289844
19	8 55 11.62	18 17 11.4	.7457387	5 6.7	141 29 47.2	0 53 27.1	.7290072
20	8 55 41.97	18 15 3.4	.7469228	5 3.3	141 34 29.0	0 53 31.9	.7290300
21	8 56 12.81	18 12 53.1	.7480982	4 59.8	141 39 10.8	0 53 36.6	.7290528
22	8 56 44.15	18 10 40.4	.7492647	4 56.4	141 43 52.6	0 53 41.3	.7290755
23	8 57 15.97	18 8 25.4	.7504220	4 53.0	141 48 34.3	0 53 46.1	.7290982
24	8 57 48.27	18 6 8.2	.7515702	4 49.6	141 53 16.0	0 53 50.9	.7291209
25	8 58 21.04	18 3 48.7	.7527089	4 46.2	141 57 57.6	0 53 55.7	.7291436
26	8 58 54.27	18 1 27.0	.7538382	4 42.8	142 2 39.2	0 53 60.5	.7291663
27	8 59 27.96	17 59 3.1	.7549578	4 39.4	142 7 20.8	0 53 65.3	.7291890
28	9 0 2.11	17 56 37.0	.7560677	4 36.0	142 12 2.4	0 53 70.1	.7292117
29	9 0 36.70	17 54 8.6	.7571676	4 32.6	142 17 4.0	0 53 74.9	.7292344
30	9 1 11.72	17 51 38.1	.7582575	4 29.2	142 22 45.6	0 53 79.7	.7292571
31	9 1 47.18	17 49 5.3	.7593371	4 25.8	142 27 47.2	0 53 84.5	.7292798
32	9 2 23.07	N.17 46 30.3	0.760406	4 22.4	142 32 48.8	0 53 89.3	.7293025

JUNE, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	^h 9 ^m 2 ^s 23.07	N. 17 46 30.3	0.7604064	^h 4 ^m 22.7	^o 142 30 48.4	N. 0 54 28.2	0.7293016
2	9 2 59.37	17 43 53.1	.7614653	4 19.4	142 35 29.8	0 54 32.9	.7293241
3	9 3 36.09	17 41 13.8	.7625136	4 16.1	142 40 11.2	0 54 37.5	.7293465
4	9 4 13.21	17 38 32.3	.7635510	4 12.8	142 44 52.6	0 54 42.1	.7293689
5	9 4 50.73	17 35 48.7	.7645776	4 9.5	142 49 33.9	0 54 46.8	.7293913
6	9 5 28.63	17 33 3.0	.7655932	4 6.2	142 54 15.2	0 54 51.4	.7294137
7	9 6 6.91	17 30 15.2	.7665975	4 2.9	142 58 56.5	0 54 56.0	.7294360
8	9 6 45.57	17 27 25.4	.7675905	3 59.6	143 3 37.8	0 55 0.6	.7294583
9	9 7 24.60	17 24 33.5	.7685720	3 56.3	143 8 19.0	0 55 5.2	.7294805
10	9 8 3.98	17 21 39.6	.7695420	3 53.0	143 13 0.2	0 55 9.8	.7295028
11	9 8 43.70	17 18 43.7	.7705002	3 49.7	143 17 41.4	0 55 14.4	.7295250
12	9 9 23.77	17 15 45.8	.7714465	3 46.5	143 22 22.5	0 55 19.0	.7295471
13	9 10 4.18	17 12 45.9	.7723817	3 43.2	143 27 3.6	0 55 23.5	.7295693
14	9 10 44.91	17 9 44.1	.7733051	3 40.0	143 31 44.7	0 55 28.1	.7295914
15	9 11 25.97	17 6 40.3	.7742167	3 36.7	143 36 25.8	0 55 32.7	.7296135
16	9 12 7.34	17 3 34.7	.7751163	3 33.5	143 41 6.8	0 55 37.2	.7296356
17	9 12 49.02	17 0 27.1	.7760038	3 30.2	143 45 47.8	0 55 41.8	.7296576
18	9 13 31.00	16 57 17.6	.7768792	3 27.0	143 50 28.8	0 55 46.3	.7296796
19	9 14 13.28	16 54 6.3	.7777429	3 23.8	143 55 9.7	0 55 50.8	.7297015
20	9 14 55.86	16 50 53.1	.7785945	3 20.6	143 59 50.6	0 55 55.4	.7297234
21	9 15 38.72	16 47 38.1	.7794339	3 17.3	144 4 31.5	0 55 59.9	.7297453
22	9 16 21.86	16 44 21.3	.7802611	3 14.1	144 9 12.4	0 56 4.4	.7297672
23	9 17 5.28	16 41 2.7	.7810761	3 10.9	144 13 53.2	0 56 8.9	.7297890
24	9 17 48.96	16 37 42.2	.7818786	3 7.7	144 18 34.0	0 56 13.4	.7298108
25	9 18 32.91	16 34 20.0	.7826688	3 4.5	144 23 14.7	0 56 17.9	.7298325
26	9 19 17.12	16 30 56.0	.7834466	3 1.3	144 27 55.5	0 56 22.4	.7298543
27	9 20 1.59	16 27 30.2	.7842118	2 58.1	144 32 36.2	0 56 26.9	.7298760
28	9 20 46.30	16 24 2.7	.7849644	2 54.9	144 37 16.9	0 56 31.4	.7298976
29	9 21 31.25	16 20 33.5	.7857044	2 51.7	144 41 57.5	0 56 35.9	.7299193
30	9 22 16.44	16 17 2.6	.7864316	2 48.5	144 46 38.1	0 56 40.3	.7299409
31	9 23 1.87	N. 16 13 30.0	0.7871459	2 45.3	144 51 18.7	N. 0 56 44.8	0.7299625

JULY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	9 23 1'87	N. 16 13 30'0	0.7871459	2 45'3	144 51 18'7	N. 0 56 44'8	0.7299625
2	9 23 47'52	16 9 55'7	.7878473	2 42'2	144 55 59'3	0 56 49'3	.7299841
3	9 24 33'39	16 6 19'7	.7885357	2 39'0	145 0 39'9	0 56 53'7	.7300056
4	9 25 19'47	16 2 42'1	.7892111	2 35'8	145 5 20'4	0 56 58'1	.7300271
5	9 26 5'76	15 59 3'0	.7898734	2 32'7	145 10 0'9	0 57 2'6	.7300486
6	9 26 52'25	15 55 22'2	.7905226	2 29'5	145 14 41'3	0 57 7'0	.7300700
7	9 27 38'93	15 51 39'9	.7911586	2 26'4	145 19 21'8	0 57 11'4	.7300914
8	9 28 25'80	15 47 56'0	.7917813	2 23'2	145 24 2'2	0 57 15'8	.7301128
9	9 29 12'85	15 44 10'6	.7923908	2 20'1	145 28 42'5	0 57 20'2	.7301342
10	9 30 0'08	15 40 23'8	.7929870	2 16'9	145 33 22'9	0 57 24'6	.7301555
11	9 30 47'47	15 36 35'4	.7935699	2 13'8	145 38 3'2	0 57 29'0	.7301768
12	9 31 35'03	15 32 45'6	.7941394	2 10'6	145 42 43'5	0 57 33'4	.7301981
13	9 32 22'75	15 28 54'4	.7946958	2 7'5	145 47 23'8	0 57 37'8	.7302194
14	9 33 10'62	15 25 1'7	.7952388	2 4'3	145 52 4'0	0 57 42'2	.7302407
15	9 33 58'64	15 21 7'7	.7957685	2 1'2	145 56 44'3	0 57 46'5	.7302619
16	9 34 46'80	15 17 12'3	.7962849	1 58'1	146 1 24'5	0 57 50'9	.7302831
17	9 35 35'11	15 13 15'6	.7967879	1 54'9	146 6 4'7	0 57 55'2	.7303043
18	9 36 23'55	15 9 17'5	.7972775	1 51'8	146 10 44'8	0 57 59'6	.7303254
19	9 37 12'12	15 5 18'2	.7977538	1 48'7	146 15 24'9	0 58 3'9	.7303465
20	9 38 0'81	15 1 17'5	.7982167	1 45'6	146 20 5'0	0 58 8'2	.7303676
21	9 38 49'63	14 57 15'6	.7986662	1 42'4	146 24 45'1	0 58 12'5	.7303887
22	9 39 38'57	14 53 12'4	.7991022	1 39'3	146 29 25'1		
23	9 40 27'62	14 49 8'0	.7995247	1 36'2	146 34 5'		
24	9 41 16'78	14 45 2'3	.7999337	1 33'1	146 38 4'		
25	9 42 6'05	14 40 55'4	.8003290	1 30'0	146 43 2'		
26	9 42 55'42	14 36 47'3	.8007107	1 26'9	146 48		
27	9 43 44'89	14 32 38'1	.8010788	1 23'7	146 52		
28	9 44 34'44	14 28 27'7	.8014331	1 20'6	146 5'		
29	9 45 24'08	14 24 16'2	.8017737	1 17'5	147		
30	9 46 13'81	14 20 3'6	.8021005	1 14'4	147		
31	9 47 3'61	14 15 50'0	.8024134	1 11'3	147		
32	9 47 53'48	N. 14 11 35'3	0.8027124	1 8'2	147		

AUGUST, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log Rad.	
				Passage.				
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]		
1	9 47 53.48	N. 14 11 35.3	0.8027124	1 8.2	147 16 4.1	N. 0 58 59.6	0.7300	
2	9 48 43.42	14 7 19.6	.8029975	1 5.1	147 20 43.8	0 59 3.8	.7300	
3	9 49 33.42	14 3 2.9	.8032687	1 2.0	147 25 23.5	0 59 8.1	.7300	
4	9 50 23.47	13 58 45.3	.8035259	0 58.9	147 30 3.2	0 59 12.3	.7300	
5	9 51 13.57	13 54 26.7	.8037691	0 55.8	147 34 42.9	0 59 16.5	.7300	
6	9 52 3.72	13 50 7.2	.8039984	0 52.7	147 39 22.5	0 59 20.7	.7300	
7	9 52 53.91	13 45 46.9	.8042138	0 49.6	147 44 2.1	0 59 24.9	.7300	
8	9 53 44.13	13 41 25.7	.8044152	0 46.5	147 48 41.7	0 59 29.1	.7300	
9	9 54 34.38	13 37 3.6	.8046026	0 43.4	147 53 21.3	0 59 33.3	.7300	
10	9 55 24.66	13 32 40.8	.8047761	0 40.3	147 58 0.8	0 59 37.5	.7300	
11	9 56 14.96	13 28 17.3	.8049355	0 37.2	148 2 40.3	0 59 41.7	.7300	
12	9 57 5.28	13 23 53.0	.8050811	0 34.1	148 7 19.8	0 59 45.8	.7300	
13	9 57 55.61	13 19 28.0	.8052128	0 31.0	148 11 59.2	0 59 50.0	.7300	
14	9 58 45.95	13 15 2.4	.8053306	0 27.9	148 16 38.6	0 59 54.1	.7300	
15	9 59 36.29	13 10 36.0	.8054345	0 24.8	148 21 18.0	0 59 58.3	.7300	
16	10 0 26.64	13 6 9.0	.8055244	0 21.7	148 25 57.4	1 0 2.4	.7300	
17	10 1 16.98	13 1 41.4	.8056003	0 18.6	148 30 36.7	1 0 6.6	.7300	
18	10 2 7.32	12 57 13.2	.8056623	0 15.5	148 35 16.0	1 0 10.7	.7300	
19	10 2 57.65	12 52 44.4	.8057104	0 12.4	148 39 55.3	1 0 14.8	.7300	
20	10 3 47.96	12 48 15.1	.8057444	0 9.3	148 44 34.6	1 0 18.9	.7310	
21	10 4 38.26	12 43 45.3	.8057645	0 6.2	148 49 13.8	1 0 23.0	.7310	
22	10 5 28.54	12 39 14.9	.8057705	0 3.1	148 53 53.0	1 0 27.1	.7310	
23	10 6 18.79	12 34 44.1	.8057625	⁰ ₂₃ ^{0.0} _{54.0}	148 58 32.2	1 0 31.2	.7310	
24	10 7 9.02	12 30 12.8	.8057404	23 53.8	149 3 11.3	1 0 35.3	.7310	
25	10 7 59.21	12 25 41.2	.8057041	23 50.7	149 7 50.4	1 0 39.4	.7311	
26	10 8 49.37	12 21 9.1	.8056537	23 47.6	149 12 29.5	1 0 43.4	.7311	
27	10 9 39.48	12 16 36.7	.8055892	23 44.5	149 17 8.6	1 0 47.5	.7311	
28	10 10 29.54	12 12 4.0	.8055104	23 41.4	149 21 47.6	1 0 51.6	.7311	
29	10 11 19.55	12 7 31.0	.8054175	23 38.3	149 26 26.6	1 0 55.6	.7311	
30	10 12 9.50	12 2 57.7	.8053103	23 35.2	149 31 5.6	1 0 59.6	.7312	
31	10 12 59.39	11 58 24.3	.8051888	23 32.1	149 35 44.5	1 1 3.7	.7312	
32	10 13 49.21	N. 11 53 50.6	0.8050530	23 29.0	149 40 23.4	N. 1 1 7.7	0.7312	

SEPTEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	h m s 10 13 49.21	N. 11 53 50.6	0.8050530	h m 23 29.0	o ' " 149 40 23.4	N. 1 1 7.7	0.7312470
2	10 14 38.96	11 49 16.8	.8049030	23 25.9	149 45 2.3	1 1 11.7	.7312667
3	10 15 28.63	11 44 42.9	.8047388	23 22.8	149 49 41.1	1 1 15.7	.7312865
4	10 16 18.22	11 40 8.9	.8045603	23 19.7	149 54 19.9	1 1 19.7	.7313062
5	10 17 7.72	11 35 34.9	.8043677	23 16.6	149 58 58.7	1 1 23.7	.7313258
6	10 17 57.13	11 31 0.9	.8041609	23 13.4	150 3 37.5	1 1 27.7	.7313455
7	10 18 46.45	11 26 26.9	.8039399	23 10.3	150 8 16.3	1 1 31.7	.7313651
8	10 19 35.66	11 21 52.9	.8037048	23 7.2	150 12 55.0	1 1 35.7	.7313846
9	10 20 24.77	11 17 19.1	.8034555	23 4.1	150 17 33.7	1 1 39.7	.7314042
10	10 21 13.78	11 12 45.4	.8031921	23 1.0	150 22 12.3	1 1 43.7	.7314237
11	10 22 2.67	11 8 11.9	.8029148	22 57.8	150 26 51.0	1 1 47.6	.7314431
12	10 22 51.44	11 3 38.5	.8026234	22 54.7	150 31 29.6	1 1 51.6	.7314626
13	10 23 40.09	10 59 5.4	.8023180	22 51.6	150 36 8.2	1 1 55.5	.7314820
14	10 24 28.62	10 54 32.5	.8019986	22 48.5	150 40 46.7	1 1 59.5	.7315014
15	10 25 17.02	10 49 59.9	.8016651	22 45.3	150 45 25.3	1 2 3.4	.7315207
16	10 26 5.29	10 45 27.6	.8013177	22 42.2	150 50 3.8	1 2 7.3	.7315400
17	10 26 53.42	10 40 55.6	.8009562	22 39.1	150 54 42.3	1 2 11.2	.7315593
18	10 27 41.42	10 36 24.0	.8005807	22 35.9	150 59 20.7	1 2 15.1	.7315785
19	10 28 29.27	10 31 52.8	.8001911	22 32.8	151 3 59.2	1 2 19.0	.7315977
20	10 29 16.97	10 27 22.1	.7997875	22 29.6	151 8 37.6	1 2 22.9	.7316169
21	10 30 4.51	10 22 51.8	.7993699	22 26.5	151 13 15.9	1 2 26.8	61
22	10 30 51.90	10 18 22.0	.7989383	22 23.4	151 17 54.3	1	
23	10 31 39.13	10 13 52.8	.7984925	22 20.2	151 22 32.6	1	
24	10 32 26.19	10 9 24.2	.7980327	22 17.1	151 27 10.9		
25	10 33 13.07	10 4 56.2	.7975588	22 13.9	151 31 49.2		
26	10 33 59.78	10 0 28.8	.7970708	22 10.7	151 36 27.5		
27	10 34 46.30	9 56 2.2	.7965688	22 7.6	151 41 5.7		
28	10 35 32.64	9 51 36.3	.7960528	22 4.4	151 45 43.1		
29	10 36 18.78	9 47 11.2	.7955227	22 1.2	151 50 22		
30	10 37 4.72	9 42 46.9	.7949787	21 58.1	151 55		
31	10 37 50.45	N. 9 38 23.6	0.7944208	21 54.9	151 59		

OCTOBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log Rad.	
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	N	
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]		
1	10 37 50.45	N.9 38 23.6	0.7944208	21 54.9	151 59 38.4	N.1 3 5.3	0.731	
2	10 38 35.98	9 34 1.1	.7938489	21 51.7	152 4 16.5	1 3 9.1	.731	
3	10 39 21.28	9 29 39.6	.7932631	21 48.5	152 8 54.6	1 3 12.8	.731	
4	10 40 6.37	9 25 19.2	.7926635	21 45.3	152 13 32.7	1 3 16.6	.731	
5	10 40 51.23	9 20 59.8	.7920503	21 42.1	152 18 10.8	1 3 20.4	.731	
6	10 41 35.85	9 16 41.6	.7914234	21 39.0	152 22 48.8	1 3 24.2	.731	
7	10 42 20.23	9 12 24.5	.7907829	21 35.8	152 27 26.8	1 3 28.0	.731	
8	10 43 4.37	9 8 8.5	.7901288	21 32.6	152 32 4.8	1 3 31.8	.731	
9	10 43 48.27	9 3 53.8	.7894612	21 29.3	152 36 42.8	1 3 35.5	.731	
10	10 44 31.92	8 59 40.3	.7887801	21 26.1	152 41 20.7	1 3 39.3	.731	
11	10 45 15.31	8 55 28.1	.7880858	21 22.9	152 45 58.6	1 3 43.0	.731	
12	10 45 58.44	8 51 17.2	.7873781	21 19.7	152 50 36.5	1 3 46.7	.731	
13	10 46 41.30	8 47 7.7	.7866571	21 16.5	152 55 14.4	1 3 50.5	.731	
14	10 47 23.90	8 42 59.6	.7859229	21 13.3	152 59 52.3	1 3 54.2	.731	
15	10 48 6.22	8 38 52.9	.7851754	21 10.0	153 4 30.1	1 3 57.9	.731	
16	10 48 48.26	8 34 47.7	.7844148	21 6.8	153 9 7.9	1 4 1.6	.731	
17	10 49 30.02	8 30 44.0	.7836409	21 3.5	153 13 45.7	1 4 5.3	.731	
18	10 50 11.49	8 26 41.9	.7828539	21 0.3	153 18 23.5	1 4 9.0	.731	
19	10 50 52.66	8 22 41.4	.7820539	20 57.0	153 23 1.3	1 4 12.7	.731	
20	10 51 33.53	8 18 42.6	.7812408	20 53.8	153 27 39.0	1 4 16.3	.731	
21	10 52 14.10	8 14 45.4	.7804147	20 50.5	153 32 16.8	1 4 20.0	.731	
22	10 52 54.35	8 10 50.0	.7795756	20 47.2	153 36 54.5	1 4 23.7	.731	
23	10 53 34.28	8 6 56.4	.7787237	20 44.0	153 41 32.2	1 4 27.3	.731	
24	10 54 13.89	8 3 4.6	.7778590	20 40.7	153 46 9.8	1 4 30.9	.731	
25	10 54 53.16	7 59 14.7	.7769815	20 37.4	153 50 47.5	1 4 34.6	.731	
26	10 55 32.10	7 55 26.8	.7760915	20 34.1	153 55 25.1	1 4 38.2	.731	
27	10 56 10.69	7 51 40.9	.7751889	20 30.8	154 0 2.7	1 4 41.8	.731	
28	10 56 48.92	7 47 57.0	.7742739	20 27.5	154 4 40.3	1 4 45.5	.731	
29	10 57 26.80	7 44 15.2	.7733464	20 24.2	154 9 17.8	1 4 49.1	.731	
30	10 58 4.31	7 40 35.6	.7724066	20 20.9	154 13 55.4	1 4 52.7	.731	
31	10 58 41.45	7 36 58.2	.7714547	20 17.6	154 18 32.9	1 4 56.3	.731	
32	10 59 18.21	N.7 33 23.0	0.7704908	20 14.2	154 23 10.4	N.1 4 59.9	0.732	

NOVEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	^h 10 ^m 59 ^s 18.21	[°] 7 ['] 33 ["] 23.0	0.7704908	^h 20 ^m 14.2	[°] 154 ['] 23 ["] 10.4	[°] N.1 ['] 4 ["] 59.9	0.7323938
2	10 59 54.59	7 29 50.1	.7695149	20 10.9	154 27 47.9	1 5 3.4	.7324116
3	11 0 30.57	7 26 19.5	.7685271	20 7.6	154 32 25.3	1 5 7.0	.7324294
4	11 1 6.16	7 22 51.4	.7675279	20 4.2	154 37 2.7	1 5 10.6	.7324472
5	11 1 41.35	7 19 25.7	.7665173	20 0.9	154 41 40.2	1 5 14.1	.7324649
6	11 2 16.13	7 16 2.4	.7654954	19 57.5	154 46 17.6	1 5 17.7	.7324826
7	11 2 50.50	7 12 41.7	.7644623	19 54.1	154 50 54.9	1 5 21.2	.7325003
8	11 3 24.45	7 9 23.6	.7634181	19 50.8	154 55 32.3	1 5 24.8	.7325179
9	11 3 57.97	7 6 8.0	.7623630	19 47.4	155 0 9.6	1 5 28.3	.7325355
10	11 4 31.06	7 2 55.1	.7612971	19 44.0	155 4 46.9	1 5 31.8	.7325531
11	11 5 3.72	6 59 44.9	.7602205	19 40.6	155 9 24.2	1 5 35.3	.7325706
12	11 5 35.94	6 56 37.4	.7591335	19 37.2	155 14 1.4	1 5 38.8	.7325881
13	11 6 7.70	6 53 32.6	.7580361	19 33.7	155 18 38.7	1 5 42.3	.7326056
14	11 6 39.01	6 50 30.7	.7569284	19 30.3	155 23 15.9	1 5 45.8	.7326230
15	11 7 9.87	6 47 31.7	.7558106	19 26.9	155 27 53.1	1 5 49.3	.7326404
16	11 7 40.26	6 44 35.6	.7546829	19 23.5	155 32 30.3	1 5 52.8	.7326578
17	11 8 10.17	6 41 42.5	.7535453	19 20.0	155 37 7.4	1 5 56.3	.7326751
18	11 8 39.60	6 38 52.4	.7523982	19 16.6	155 41 44.5	1 5 59.7	.7326924
19	11 9 8.55	6 36 5.3	.7512415	19 13.1	155 46 21.6	1 6 3.2	.7327097
20	11 9 37.00	6 33 21.4	.7500754	19 9.7	155 50 58.7	1 6 6.7	.7327270
21	11 10 4.95	6 30 40.6	.7489000	19 6.2	155 55 35.8	1 6 10.1	.7327442
22	11 10 32.39	6 28 3.0	.7477157	19 2.7	156 0 12.8	1 6 13.6	.7327613
23	11 10 59.32	6 25 28.7	.7465226	18 59.2	156 4 49.9	1 6 17.1	.7327784
24	11 11 25.72	6 22 57.7	.7453210	18 55.7	156 9 26.9	1 6 20.6	.7327955
25	11 11 51.60	6 20 30.1	.7441110	18 52.2	156 14 3.9	1 6 24.1	.7328127
26	11 12 16.94	6 18 5.9	.7428929	18 48.7	156 18 40.8	1 6 27.6	.7328297
27	11 12 41.73	6 15 45.2	.7416669	18 45.2	156 23 17.8	1 6 31.1	.7328468
28	11 13 5.97	6 13 28.0	.7404336	18 41.6	156 27 54.7	1 6 34.6	.7328638
29	11 13 29.65	6 11 14.5	.7391930	18 38.1	156 32 31.6	1 6 38.1	.7328809
30	11 13 52.77	6 9 4.5	.7379454	18 34.5	156 37 8.5	1 6 41.6	.7328979
31	11 14 15.32	N.6 6 58.2	0.7366911	18 30.9	156 41 45.4	1 6 45.1	.7329150

DECEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vec.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	^{h m s} 11 14 15.32	^{° ' "} N. 6 6 58.2	0.7366911	^{h m} 18 30.9	^{° ' "} 156 41 45.3	^{° ' "} N. 1 6 44.2	0.73291
2	11 14 37.29	6 4 55.5	.7354304	18 27.4	156 46 22.2	1 6 47.5	.73293
3	11 14 58.68	6 2 56.6	.7341634	18 23.8	156 50 59.0	1 6 50.9	.73294
4	11 15 19.48	6 1 1.4	.7328907	18 20.2	156 55 35.8	1 6 54.2	.73296
5	11 15 39.69	5 59 10.1	.7316124	18 16.6	157 0 12.6	1 6 57.6	.73298
6	11 15 59.30	5 57 22.6	.7303288	18 13.0	157 4 49.4	1 7 0.9	.73299
7	11 16 18.30	5 55 39.0	.7290403	18 9.3	157 9 26.1	1 7 4.2	.73301
8	11 16 36.70	5 53 59.3	.7277470	18 5.7	157 14 2.8	1 7 7.6	.73303
9	11 16 54.48	5 52 23.6	.7264494	18 2.1	157 18 39.5	1 7 10.9	.73304
10	11 17 11.65	5 50 51.9	.7251478	17 58.4	157 23 16.2	1 7 14.2	.73306
11	11 17 28.20	5 49 24.3	.7238425	17 54.8	157 27 52.9	1 7 17.5	.73308
12	11 17 44.11	5 48 0.8	.7225338	17 51.1	157 32 29.5	1 7 20.7	.73309
13	11 17 59.39	5 46 41.3	.7212219	17 47.4	157 37 6.1	1 7 24.0	.73311
14	11 18 14.02	5 45 25.9	.7199072	17 43.7	157 41 42.7	1 7 27.3	.73313
15	11 18 28.01	5 44 14.7	.7185900	17 40.0	157 46 19.3	1 7 30.6	.73314
16	11 18 41.35	5 43 7.6	.7172705	17 36.3	157 50 55.9	1 7 33.8	.73316
17	11 18 54.03	5 42 4.8	.7159491	17 32.6	157 55 32.4	1 7 37.1	.73318
18	11 19 6.05	5 41 6.2	.7146263	17 28.8	158 0 8.9	1 7 40.3	.73319
19	11 19 17.40	5 40 11.9	.7133025	17 25.1	158 4 45.4	1 7 43.5	.73321
20	11 19 28.08	5 39 21.9	.7119779	17 21.3	158 9 21.9	1 7 46.7	.73322
21	11 19 38.08	5 38 36.3	.7106529	17 17.5	158 13 58.3	1 7 50.0	.73324
22	11 19 47.39	5 37 55.1	.7093285	17 13.7	158 18 34.8	1 7 53.2	.73326
23	11 19 56.02	5 37 18.3	.7080050	17 9.9	158 23 11.2	1 7 56.4	.73327
24	11 20 3.95	5 36 46.0	.7066825	17 6.1	158 27 47.6	1 7 59.6	.73329
25	11 20 11.19	5 36 18.1	.7053615	17 2.3	158 32 23.9	1 8 2.8	.73330
26	11 20 17.73	5 35 54.7	.7040425	16 58.5	158 37 0.3	1 8 5.9	.73332
27	11 20 23.57	5 35 35.9	.7027260	16 54.6	158 41 36.6	1 8 9.1	.73334
28	11 20 28.70	5 35 21.6	.7014123	16 50.8	158 46 13.0	1 8 12.3	.73335
29	11 20 33.12	5 35 11.8	.7001020	16 46.9	158 50 49.4	1 8 15.4	.73337
30	11 20 36.84	5 35 6.5	.6987955	16 43.0	158 55 25.7	1 8 18.6	.73338
31	11 20 39.84	5 35 5.8	.6974934	16 39.1	159 0 1.9	1 8 21.7	.73340
32	11 20 42.13	N. 5 35 9.6	0.6961960	16 35.2	159 4 38.1	N. 1 8 24.9	0.73342

JANUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	h m s 14 51 51.33	S. 14 7 22.8	1.0157334	h m 20 5.1	219 59 35.4	N. 2 22 15.2	0.9937190
2	14 52 11.15	14 8 40.5	.0151503	20 1.5	220 1 28.3	2 22 13.7	.9937297
3	14 52 30.69	14 9 56.8	.0145602	19 57.9	220 3 21.3	2 22 12.2	.9937403
4	14 52 49.95	14 11 11.5	.0139632	19 54.3	220 5 14.4	2 22 10.7	.9937509
5	14 53 8.93	14 12 24.6	.0133594	19 50.6	220 7 7.5	2 22 9.2	.9937616
6	14 53 27.62	14 13 36.2	.0127488	19 47.0	220 9 0.6	2 22 7.7	.9937722
7	14 53 46.02	14 14 46.3	.0121318	19 43.4	220 10 53.6	2 22 6.2	.9937829
8	14 54 4.11	14 15 54.8	.0115085	19 39.7	220 12 46.6	2 22 4.6	.9937935
9	14 54 21.89	14 17 1.7	.0108789	19 36.1	220 14 39.6	2 22 3.1	.9938041
10	14 54 39.36	14 18 7.0	.0102433	19 32.5	220 16 32.5	2 22 1.6	.9938147
11	14 54 56.52	14 19 10.7	.0096017	19 28.8	220 18 25.4	2 22 0.1	.9938253
12	14 55 13.37	14 20 12.8	.0089544	19 25.2	220 20 18.2	2 21 58.5	.9938360
13	14 55 29.89	14 21 13.3	.0083015	19 21.5	220 22 11.1	2 21 57.0	.9938466
14	14 55 46.09	14 22 12.1	.0076432	19 17.8	220 24 4.0	2 21 55.5	.9938572
15	14 56 1.96	14 23 9.3	.0069797	19 14.1	220 25 56.9	2 21 53.9	.9938678
16	14 56 17.51	14 24 4.9	.0063110	19 10.5	220 27 49.8	2 21 52.4	.9938784
17	14 56 32.72	14 24 58.9	.0056374	19 6.8	220 29 42.8	2 21 50.9	.9938890
18	14 56 47.59	14 25 51.1	.0049590	19 3.1	220 31 35.8	2 21 49.3	.9938996
19	14 57 2.12	14 26 41.7	.0042759	18 59.4	220 33 28.7	2 21 47.8	.9939101
20	14 57 16.31	14 27 30.7	.0035884	18 55.7	220 35 21.7	2 21 46.2	.9939207
21	14 57 30.15	14 28 18.0	.0028965	18 52.0	220 37 14.7	2 21 44.7	.9939313
22	14 57 43.64	14 29 3.6	.0022005	18 48.3	220 39 7.6	2 21 43.1	.9939419
23	14 57 56.78	14 29 47.5	.0015005	18 44.6	220 41 0.8	2 21 41.6	.9939524
24	14 58 9.56	14 30 29.8	.0007966	18 40.9	220 42 53.8	2 21 40.0	.9939630
25	14 58 21.97	14 31 10.4	1.0000891	18 37.1	220 44 46.8	2 21 38.5	.9939735
26	14 58 34.01	14 31 49.2	0.9993780	18 33.4	220 46 39.8	2 21 36.9	.9939841
27	14 58 45.69	14 32 26.4	.9986635	18 29.6	220 48 32.8	2 21 35.4	.9939946
28	14 58 57.00	14 33 2.0	.9979459	18 25.9	220 50 25.8	2 21 33.8	.9940052
29	14 59 7.94	14 33 57.8	.9972253	18 22.1	220 52 18.8	2 21 32.2	.9940157
30	14 59 18.50	14 34 53.0	.9965019	18 18.4	220 54 11.8	2 21 30.7	.9940263
31	14 59 28.68	14 35 47.7	.9957759	18 14.6	220 56 4.8	2 21 29.1	.9940368
32	14 59 38.49	S. 14 35 6.0	.9950477	18 10.8	220 57 57.8	2 21 27.5	0.9940474

FEBRUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. V.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	14 59 38.49	S. 14 35 6.30	.9950477	18 10.8	220 57 55.7	N. 2 21 27.5	0.9940
2	14 59 47.91	14 35 33.1	.9943173	18 7.1	220 59 48.6	2 21 26.0	.9940
3	14 59 56.94	14 35 58.2	.9935850	18 3.3	221 1 41.5	2 21 24.4	.9940
4	15 0 5.59	14 36 21.5	.9928509	17 59.5	221 3 34.4	2 21 22.8	.9940
5	15 0 13.84	14 36 43.0	.9921153	17 55.7	221 5 27.2	2 21 21.2	.9940
6	15 0 21.69	14 37 2.8	.9913784	17 51.9	221 7 19.9	2 21 19.6	.9941
7	15 0 29.13	14 37 20.8	.9906403	17 48.1	221 9 12.6	2 21 18.0	.9941
8	15 0 36.17	14 37 37.0	.9899013	17 44.2	221 11 5.3	2 21 16.5	.9941
9	15 0 42.81	14 37 51.4	.9891616	17 40.4	221 12 57.9	2 21 14.9	.9941
10	15 0 49.04	14 38 4.1	.9884214	17 36.6	221 14 50.6	2 21 13.3	.9941
11	15 0 54.87	14 38 15.0	.9876810	17 32.7	221 16 43.3	2 21 11.7	.9941
12	15 1 0.30	14 38 24.2	.9869407	17 28.9	221 18 36.0	2 21 10.1	.9941
13	15 1 5.33	14 38 31.7	.9862009	17 25.0	221 20 28.8	2 21 8.5	.9941
14	15 1 9.95	14 38 37.5	.9854616	17 21.2	221 22 21.6	2 21 6.9	.9941
15	15 1 14.16	14 38 41.5	.9847230	17 17.3	221 24 14.4	2 21 5.3	.9941
16	15 1 17.97	14 38 43.8	.9839855	17 13.4	221 26 7.2	2 21 3.7	.9942
17	15 1 21.37	14 38 44.4	.9832492	17 9.5	221 28 0.0	2 21 2.1	.9942
18	15 1 24.36	14 38 43.3	.9825144	17 5.6	221 29 52.7	2 21 0.5	.9942
19	15 1 26.94	14 38 40.4	.9817811	17 1.8	221 31 45.4	2 20 58.8	.9942
20	15 1 29.10	14 38 35.8	.9810497	16 57.9	221 33 38.1	2 20 57.2	.9942
21	15 1 30.86	14 38 29.5	.9803203	16 54.0	221 35 30.7	2 20 55.6	.9942
22	15 1 32.20	14 38 21.5	.9795933	16 50.1	221 37 23.3	2 20 54.0	.9942
23	15 1 33.14	14 38 11.8	.9788688	16 46.1	221 39 15.8	2 20 52.3	.9942
24	15 1 33.67	14 38 0.4	.9781470	16 42.2	221 41 8.4	2 20 50.7	.9942
25	15 1 33.80	14 37 47.3	.9774282	16 38.3	221 43 1.0	2 20 49.1	.9942
26	15 1 33.51	14 37 32.6	.9767125	16 34.3	221 44 53.6	2 20 47.5	.9942
27	15 1 32.82	14 37 16.2	.9760004	16 30.4	221 46 46.3	2 20 45.8	.9942
28	15 1 31.72	14 36 58.1	.9752919	16 26.4	221 48 39.0	2 20 44.2	.9942
29	15 1 30.21	S. 14 36 38.40	.9745874	16 22.5	221 50 31.7	N. 2 20 42.5	0.9942

SATURN.

337

MARCH, 1837.

MEAN TIME.

Geocentric.				Heliocentric.		
Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1 30 ^m 21 ^s	S. 14 36 38 ^o 4 ^h	0 ^h 9745874	16 22 ^m 5 ^s	221 50 31 ^o 7 ^h	N. 2 20 42 ^o 5 ^h	0 ^h 9943404
1 28 ^m 28 ^s	14 36 17 ^o 0 ^h	9738871	16 18 ^m 5 ^s	221 52 24 ^o 5 ^h	2 20 40 ^o 9 ^h	9943508
1 25 ^m 94 ^s	14 35 53 ^o 9 ^h	9731914	16 14 ^m 5 ^s	221 54 17 ^o 2 ^h	2 20 39 ^o 3 ^h	9943612
1 23 ^m 20 ^s	14 35 29 ^o 2 ^h	9725004	16 10 ^m 5 ^s	221 56 9 ^o 8 ^h	2 20 37 ^o 6 ^h	9943715
1 20 ^m 06 ^s	14 35 2 ^o 8 ^h	9718144	16 6 ^m 5 ^s	221 58 2 ^o 4 ^h	2 20 36 ^o 0 ^h	9943818
1 16 ^m 51 ^s	14 34 34 ^o 9 ^h	9711337	16 2 ^m 5 ^s	221 59 54 ^o 9 ^h	2 20 34 ^o 3 ^h	9943922
1 12 ^m 56 ^s	14 34 5 ^o 3 ^h	9704585	15 58 ^m 5 ^s	222 1 47 ^o 3 ^h	2 20 32 ^o 7 ^h	9944025
1 8 ^m 21 ^s	14 33 34 ^o 1 ^h	9697891	15 54 ^m 5 ^s	222 3 39 ^o 8 ^h	2 20 31 ^o 0 ^h	9944128
1 3 ^m 47 ^s	14 33 1 ^o 4 ^h	9691259	15 50 ^m 5 ^s	222 5 32 ^o 3 ^h	2 20 29 ^o 3 ^h	9944232
0 58 ^m 34 ^s	14 32 27 ^o 1 ^h	9684690	15 46 ^m 5 ^s	222 7 24 ^o 8 ^h	2 20 27 ^o 7 ^h	9944335
0 52 ^m 82 ^s	14 31 51 ^o 3 ^h	9678186	15 42 ^m 5 ^s	222 9 17 ^o 4 ^h	2 20 26 ^o 0 ^h	9944438
0 46 ^m 92 ^s	14 31 14 ^o 0 ^h	9671752	15 38 ^m 5 ^s	222 11 10 ^o 0 ^h	2 20 24 ^o 4 ^h	9944541
0 40 ^m 64 ^s	14 30 35 ^o 2 ^h	9665388	15 34 ^m 4 ^s	222 13 2 ^o 6 ^h	2 20 22 ^o 7 ^h	9944644
0 33 ^m 98 ^s	14 29 54 ^o 9 ^h	9659097	15 30 ^m 4 ^s	222 14 55 ^o 2 ^h	2 20 21 ^o 0 ^h	9944747
0 26 ^m 95 ^s	14 29 13 ^o 2 ^h	9652881	15 26 ^m 3 ^s	222 16 47 ^o 8 ^h	2 20 19 ^o 3 ^h	9944850
0 19 ^m 55 ^s	14 28 30 ^o 1 ^h	9646744	15 22 ^m 3 ^s	222 18 40 ^o 4 ^h	2 20 17 ^o 7 ^h	9944953
0 11 ^m 79 ^s	14 27 45 ^o 6 ^h	9640686	15 18 ^m 2 ^s	222 20 33 ^o 0 ^h	2 20 16 ^o 0 ^h	9945056
0 3 ^m 66 ^s	14 26 59 ^o 6 ^h	9634711	15 14 ^m 1 ^s	222 22 25 ^o 5 ^h	2 20 14 ^o 3 ^h	9945158
59 55 ^m 18 ^s	14 26 12 ^o 3 ^h	9628820	15 10 ^m 0 ^s	222 24 18 ^o 0 ^h	2 20 12 ^o 6 ^h	9945261
59 46 ^m 34 ^s	14 25 23 ^o 6 ^h	9623017	15 6 ^m 0 ^s	222 26 10 ^o 5 ^h	2 20 10 ^o 9 ^h	9945363
59 37 ^m 15 ^s	14 24 33 ^o 6 ^h	9617302	15 1 ^m 9 ^s	222 28 2 ^o 9 ^h	2 20 9 ^o 2 ^h	9945466
59 27 ^m 62 ^s	14 23 42 ^o 2 ^h	9611678	14 57 ^m 8 ^s	222 29 55 ^o 3 ^h	2 20 7 ^o 6 ^h	9945568
59 17 ^m 75 ^s	14 22 49 ^o 5 ^h	9606148	14 53 ^m 7 ^s	222 31 47 ^o 8 ^h	2 20 5 ^o 9 ^h	9945671
59 7 ^m 54 ^s	14 21 55 ^o 6 ^h	9600712	14 49 ^m 6 ^s	222 33 40 ^o 2 ^h	2 20 4 ^o 2 ^h	9945774
58 57 ^m 01 ^s	14 21 0 ^o 4 ^h	9595374	14 45 ^m 4 ^s	222 35 32 ^o 6 ^h	2 20 2 ^o 0 ^h	9945877
58 46 ^m 15 ^s	14 20 4 ^o 1 ^h	9590136	14 41 ^m 3 ^s	222 37 25 ^o 1 ^h	2 20 0 ^o 0 ^h	9945980
58 34 ^m 97 ^s	14 19 6 ^o 5 ^h	9584998	14 37 ^m 2 ^s	222 39 17 ^o 7 ^h	2 19 58 ^o 0 ^h	9946083
58 23 ^m 48 ^s	14 18 7 ^o 8 ^h	9579964	14 33 ^m 1 ^s	222 41 10 ^o 2 ^h	2 19 56 ^o 0 ^h	9946186
58 11 ^m 68 ^s	14 17 7 ^o 9 ^h	9575036	14 29 ^m 0 ^s	222 43 2 ^o 0 ^h	2 19 54 ^o 0 ^h	9946289
57 59 ^m 57 ^s	14 16 6 ^o 9 ^h	9570215	14 24 ^m 8 ^s	222 44 55 ^o 1 ^h	2 19 52 ^o 0 ^h	9946392
57 47 ^m 17 ^s	14 15 4 ^o 8 ^h	9565505	14 20 ^m 7 ^s	222 46 47 ^o 2 ^h	2 19 50 ^o 0 ^h	9946495
57 34 ^m 48 ^s	S. 14 14 1 ^o 6 ^h	0 ^h 9560907	14 16 ^m 6 ^s	222 48 39 ^o 3 ^h	2 19 48 ^o 0 ^h	9946598

APRIL, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. Rad. V.	
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.	
	h m s	° ' "		h m	° ' "	° ' "		
1	14 57 34.48	S. 14 14 1'6	0.9560907	14 16.6	222 48 40.3	N. 2 19 50.5	0.9946	
2	14 57 21.50	14 12 57.3	.9556426	14 12.4	222 50 32.7	2 19 48.8	.9946	
3	14 57 8.24	14 11 52.0	.9552061	14 8.3	222 52 25.1	2 19 47.1	.9946	
4	14 56 54.71	14 10 45.7	.9547816	14 4.1	222 54 17.5	2 19 45.3	.9946	
5	14 56 40.92	14 9 38.5	.9543692	13 59.9	222 56 9.8	2 19 43.6	.9946	
6	14 56 26.87	14 8 30.4	.9539690	13 55.8	222 58 2.2	2 19 41.9	.9947	
7	14 56 12.58	14 7 21.4	.9535814	13 51.6	222 59 54.6	2 19 40.2	.9947	
8	14 55 58.05	14 6 11.6	.9532063	13 47.4	223 1 47.1	2 19 38.4	.9947	
9	14 55 43.29	14 5 1.0	.9528440	13 43.2	223 3 39.6	2 19 36.7	.9947	
10	14 55 28.31	14 3 49.7	.9524946	13 39.0	223 5 32.1	2 19 34.9	.9947	
11	14 55 13.11	14 2 37.6	.9521583	13 34.9	223 7 24.6	2 19 33.2	.9947	
12	14 54 57.71	14 1 24.8	.9518352	13 30.7	223 9 17.1	2 19 31.5	.9947	
13	14 54 42.11	14 0 11.4	.9515256	13 26.5	223 11 9.6	2 19 29.7	.9947	
14	14 54 26.31	13 58 57.3	.9512293	13 22.3	223 13 2.0	2 19 28.0	.9947	
15	14 54 10.33	13 57 42.6	.9509466	13 18.1	223 14 54.4	2 19 26.2	.9948	
16	14 53 54.18	13 56 27.4	.9506775	13 13.9	223 16 46.8	2 19 24.5	.9948	
17	14 53 37.86	13 55 11.7	.9504223	13 9.7	223 18 39.1	2 19 22.7	.9948	
18	14 53 21.39	13 53 55.5	.9501811	13 5.5	223 20 31.4	2 19 21.0	.9948	
19	14 53 4.77	13 52 38.9	.9499539	13 1.3	223 22 23.7	2 19 19.2	.9948	
20	14 52 48.01	13 51 21.9	.9497406	12 57.1	223 24 16.0	2 19 17.5	.9948	
21	14 52 31.12	13 50 4.6	.9495414	12 52.9	223 26 8.4	2 19 15.7	.9948	
22	14 52 14.11	13 48 46.9	.9493565	12 48.6	223 28 0.8	2 19 13.9	.9948	
23	14 51 56.99	13 47 28.9	.9491859	12 44.4	223 29 53.2	2 19 12.2	.9948	
24	14 51 39.76	13 46 10.7	.9490296	12 40.2	223 31 45.6	2 19 10.4	.9948	
25	14 51 22.43	13 44 52.3	.9488879	12 36.0	223 33 38.1	2 19 8.6	.9949	
26	14 51 5.01	13 43 33.7	.9487607	12 31.8	223 35 30.6	2 19 6.8	.9949	
27	14 50 47.51	13 42 14.9	.9486481	12 27.6	223 37 23.0	2 19 5.1	.9949	
28	14 50 29.94	13 40 56.0	.9485501	12 23.3	223 39 15.4	2 19 3.3	.9949	
29	14 50 12.31	13 39 37.1	.9484669	12 19.1	223 41 7.7	2 19 1.5	.9949	
30	14 49 54.63	13 38 18.1	.9483984	12 14.9	223 43 0.0	2 18 59.7	.9949	
31	14 49 36.90	S. 13 36 59.2	0.9483448	12 10.7	223 44 52.2	N. 2 18 57.9	0.9949	

SATURN.

339

MAY, 1837.

MEAN TIME.

Geocentric.				Heliocentric.		
Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
h m s	° ' "		h m	° ' "	° ' "	
14 49 36.90	S. 13 36 59.2	0.9483448	12 10.7	223 44 52.2	N. 2 18 57.9	0.9949627
14 49 19.14	13 35 40.3	0.9483060	12 6.4	223 46 44.4	2 18 56.1	0.9949728
14 49 1.35	13 34 21.6	0.9482820	12 2.2	223 48 36.7	2 18 54.3	0.9949829
14 48 43.55	13 33 3.1	0.9482729	11 58.0	223 50 29.0	2 18 52.5	0.9949929
14 48 25.74	13 31 44.7	0.9482786	11 53.8	223 52 21.3	2 18 50.7	0.9950030
14 48 7.94	13 30 26.6	0.9482993	11 49.5	223 54 13.7	2 18 48.9	0.9950131
14 47 50.16	13 29 8.8	0.9483349	11 45.3	223 56 6.1	2 18 47.1	0.9950231
14 47 32.40	13 27 51.3	0.9483853	11 41.1	223 57 58.5	2 18 45.3	0.9950332
14 47 14.68	13 26 34.2	0.9484504	11 36.8	223 59 50.9	2 18 43.5	0.9950432
14 46 57.01	13 25 17.6	0.9485303	11 32.6	224 1 43.2	2 18 41.7	0.9950533
14 46 39.39	13 24 1.4	0.9486249	11 28.4	224 3 35.5	2 18 39.9	0.9950633
14 46 21.82	13 22 45.8	0.9487341	11 24.2	224 5 27.8	2 18 38.1	0.9950733
14 46 4.32	13 21 30.6	0.9488579	11 19.9	224 7 20.1	2 18 36.2	0.9950834
14 45 46.90	13 20 16.0	0.9489960	11 15.7	224 9 12.3	2 18 34.4	0.9950934
14 45 29.58	13 19 2.1	0.9491484	11 11.5	224 11 4.5	2 18 32.6	0.9951034
14 45 12.35	13 17 48.8	0.9493152	11 7.3	224 12 56.7	2 18 30.8	0.9951134
14 44 55.22	13 16 36.2	0.9494961	11 3.1	224 14 48.9	2 18 29.0	0.9951234
14 44 38.21	13 15 24.3	0.9496911	10 58.9	224 16 41.1	2 18 27.1	0.9951334
14 44 21.32	13 14 13.3	0.9499001	10 54.7	224 18 33.4	2 18 25.3	0.9951434
14 44 4.57	13 13 3.1	0.9501229	10 50.4	224 20 25.7	2 18 23.5	0.9951534
14 43 47.96	13 11 53.7	0.9503596	10 46.2	224 22 18.1	2 18 21.6	0.9951634
14 43 31.49	13 10 45.2	0.9506099	10 42.0	224 24 10.4	2 18 19.8	0.9951734
14 43 15.17	13 9 37.6	0.9508737	10 37.8	224 26 2.8	2 18 17.9	0.9951834
14 42 59.01	13 8 31.0	0.9511511	10 33.6	224 27 55.1	1	0.9951934
14 42 43.02	13 7 25.3	0.9514418	10 29.4	224 29 47		0.9952034
14 42 27.20	13 6 20.6	0.9517458	10 25.2	224 31 39		0.9952133
14 42 11.56	13 5 16.9	0.9520628	10 21.1	224 33 31		0.9952233
14 41 56.11	13 4 14.4	0.9523929	10 16.9	224 35 23		0.9952333
14 41 40.86	13 3 12.9	0.9527358	10 12.7	224 37 16		0.9952432
14 41 25.82	13 2 12.6	0.9530914	10 8.5	39		2532
14 41 10.99	13 1 13.5	0.9534596	10 4.3	41		531
14 40 56.39	S. 13 0 15.7	0.9538401	10 0			730

JUNE, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	h m s 14 40 56.39	S. 13 0 15.7	0.9538401	h m 10 0.1	224 42 52.6	N. 2 18 1.2	0.9952730
2	14 40 42.03	12 59 19.1	.9542329	9 56.0	224 44 44.9	2 17 59.4	.9952829
3	14 40 27.90	12 58 23.8	.9546377	9 51.8	224 46 37.1	2 17 57.5	.9952928
4	14 40 14.01	12 57 29.9	.9550544	9 47.7	224 48 29.4	2 17 55.6	.9953027
5	14 40 0.37	12 56 37.4	.9554828	9 43.5	224 50 21.7	2 17 53.8	.9953126
6	14 39 46.99	12 55 46.2	.9559227	9 39.4	224 52 14.0	2 17 51.9	.9953225
7	14 39 33.87	12 54 56.4	.9563738	9 35.2	224 54 6.2	2 17 50.0	.9953324
8	14 39 21.01	12 54 8.1	.9568359	9 31.1	224 55 58.3	2 17 48.1	.9953423
9	14 39 8.43	12 53 21.3	.9573089	9 26.9	224 57 50.5	2 17 46.2	.9953521
10	14 38 56.13	12 52 35.9	.9577926	9 22.8	224 59 42.7	2 17 44.4	.9953620
11	14 38 44.11	12 51 52.0	.9582868	9 18.7	225 1 34.8	2 17 42.5	.9953719
12	14 38 32.39	12 51 9.7	.9587912	9 14.5	225 3 26.8	2 17 40.6	.9953817
13	14 38 20.97	12 50 28.9	.9593055	9 10.4	225 5 18.9	2 17 38.7	.9953916
14	14 38 9.85	12 49 49.8	.9598295	9 6.3	225 7 11.0	2 17 36.8	.9954014
15	14 37 59.04	12 49 12.2	.9603631	9 2.2	225 9 3.1	2 17 34.9	.9954113
16	14 37 48.54	12 48 36.2	.9609061	8 58.1	225 10 55.3	2 17 33.0	.9954211
17	14 37 38.35	12 48 1.8	.9614582	8 54.0	225 12 47.5	2 17 31.1	.9954309
18	14 37 28.48	12 47 29.1	.9620192	8 49.9	225 14 39.7	2 17 29.2	.9954408
19	14 37 18.93	12 46 58.1	.9625890	8 45.8	225 16 31.9	2 17 27.3	.9954506
20	14 37 9.70	12 46 28.7	.9631672	8 41.7	225 18 24.1	2 17 25.4	.9954604
21	14 37 0.80	12 46 1.0	.9637538	8 37.7	225 20 16.3	2 17 23.5	.9954702
22	14 36 52.23	12 45 35.1	.9643484	8 33.6	225 22 8.4	2 17 21.6	.9954801
23	14 36 44.00	12 45 10.9	.9649510	8 29.5	225 24 0.5	2 17 19.7	.9954899
24	14 36 36.10	12 44 48.4	.9655612	8 25.5	225 25 52.5	2 17 17.7	.9954997
25	14 36 28.55	12 44 27.7	.9661789	8 21.4	225 27 44.5	2 17 15.8	.9955095
26	14 36 21.34	12 44 8.7	.9668039	8 17.4	225 29 36.5	2 17 13.9	.9955193
27	14 36 14.49	12 43 51.5	.9674359	8 13.3	225 31 28.6	2 17 12.0	.9955291
28	14 36 7.99	12 43 36.1	.9680748	8 9.3	225 33 20.6	2 17 10.0	.9955388
29	14 36 1.84	12 43 22.5	.9687202	8 5.2	225 35 12.7	2 17 8.1	.9955486
30	14 35 56.06	12 43 10.7	.9693720	8 1.2	225 37 4.9	2 17 6.2	.9955584
31	14 35 50.64	S. 12 43 0.7	0.9700299	7 57.2	225 38 57.0	N. 2 17 4.3	0.9955682

JULY, 1837.

MEAN TIME.

Geocentric.				Heliocentric.		
Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
14 35 50.64 S.	12 43 0.7	0.9700299	7 57.2	225 38 57.0	N. 2 17 4.3	0.9955682
14 35 45.59	12 42 52.5	.9706936	7 53.2	225 40 49.2	2 17 2.3	.9955780
14 35 40.91	12 42 46.2	.9713630	7 49.2	225 42 41.4	2 17 0.4	.9955878
14 35 36.60	12 42 41.7	.9720377	7 45.2	225 44 33.5	2 16 58.5	.9955976
14 35 32.65	12 42 39.0	.9727177	7 41.2	225 46 25.6	2 16 56.5	.9956074
14 35 29.08	12 42 38.2	.9734026	7 37.2	225 48 17.6	2 16 54.6	.9956172
14 35 25.88	12 42 39.3	.9740921	7 33.2	225 50 9.6	2 16 52.6	.9956270
14 35 23.05	12 42 42.3	.9747861	7 29.2	225 52 1.6	2 16 50.7	.9956368
14 35 20.60	12 42 47.1	.9754843	7 25.2	225 53 53.6	2 16 48.7	.9956466
14 35 18.53	12 42 53.8	.9761863	7 21.3	225 55 45.5	2 16 46.8	.9956563
14 35 16.84	12 43 2.4	.9768921	7 17.3	225 57 37.5	2 16 44.8	.9956661
14 35 15.53	12 43 12.8	.9776014	7 13.4	225 59 29.4	2 16 42.9	.9956759
14 35 14.61	12 43 25.1	.9783138	7 9.4	226 1 21.4	2 16 40.9	.9956856
14 35 14.07	12 43 39.3	.9790293	7 5.5	226 3 13.5	2 16 38.9	.9956954
14 35 13.90	12 43 55.3	.9797475	7 1.6	226 5 5.6	2 16 37.0	.9957051
14 35 14.12	12 44 13.1	.9804683	6 57.6	226 6 57.7	2 16 35.0	.9957148
14 35 14.72	12 44 32.8	.9811914	6 53.7	226 8 49.8	2 16 33.0	.9957246
14 35 15.69	12 44 54.3	.9819167	6 49.8	226 10 41.9	2 16 31.1	.9957343
14 35 17.03	12 45 17.5	.9826439	6 45.9	226 12 33.9	2 16 29.1	.9957440
14 35 18.75	12 45 42.6	.9833729	6 42.0	226 14 25.8	2 16 27.1	.9957537
14 35 20.86	12 46 9.5	.9841035	6 38.1	226 16 17.7	2 16 25.1	.9957634
14 35 23.34	12 46 38.1	.9848354	6 34.2	226 18 9.5	2 16 23.1	.9957731
14 35 26.20	12 47 8.6	.9855685	6 30.3	226 20 1.4	2 16 21.2	.9957828
14 35 29.43	12 47 40.9	.9863027	6 26.5	226 21 53.3	2 16 19.2	.9957925
14 35 33.05	12 48 15.0	.9870378	6 22.6	226 23 45.2	2 16 17.2	.9958022
14 35 37.05	12 48 51.0	.9877736	6 18.7	226 25 37.0	2 16 15.2	.9958119
14 35 41.43	12 49 28.7	.9885099	6 14.9	226 27	2 16 13.2	.9958216
14 35 46.18	12 50 8.1	.9892464	6 11.0	226 29		58312
14 35 51.31	12 50 49.3	.9899829	6 7.2	226 31		8409
14 35 56.82	12 51 32.3	.9907192	6 3.4	226 33		505
14 36 2.70	12 52 17.0	.9914549	5 59.6	226 35		1
14 36 8.95 S.	12 53 3.4	0.992189				

AUGUST, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	14 36 8 ^h 95 ^m S.	12 53 3 ^o 4 ⁱ 4 ^u	0.9921898	5 55.7	226 36 49 ^o 1 ⁱ 1 ^u	N. 2 16 3 ^o 2 ⁱ 2 ^u	0.9958697
2	14 36 15.58	12 53 51.5	.9929239	5 51.8	226 38 41.0	2 16 1.2	.9958793
3	14 36 22.58	12 54 41.3	.9936569	5 48.0	226 40 32.8	2 15 59.2	.9958889
4	14 36 29.94	12 55 32.7	.9943886	5 44.2	226 42 24.6	2 15 57.2	.9958985
5	14 36 37.67	12 56 25.8	.9951187	5 40.4	226 44 16.4	2 15 55.2	.9959080
6	14 36 45.77	12 57 20.6	.9958472	5 36.6	226 46 8.2	2 15 53.2	.9959176
7	14 36 54.23	12 58 17.1	.9965739	5 32.8	226 48 0.0	2 15 51.2	.9959272
8	14 37 3.06	12 59 15.2	.9972985	5 29.0	226 49 51.8	2 15 49.1	.9959367
9	14 37 12.24	13 0 14.8	.9980208	5 25.3	226 51 43.6	2 15 47.1	.9959463
10	14 37 21.78	13 1 16.1	.9987407	5 21.5	226 53 35.5	2 15 45.1	.9959558
11	14 37 31.67	13 2 18.9	.9994579	5 17.7	226 55 27.4	2 15 43.1	.9959653
12	14 37 41.92	13 3 23.2	1.0001726	5 14.0	226 57 19.3	2 15 41.0	.9959749
13	14 37 52.51	13 4 29.1	.0008845	5 10.2	226 59 11.2	2 15 39.0	.9959844
14	14 38 3.45	13 5 36.5	.0015933	5 6.5	227 1 3.1	2 15 37.0	.9959939
15	14 38 14.74	13 6 45.4	.0022989	5 2.7	227 2 54.9	2 15 34.9	.9960034
16	14 38 26.37	13 7 55.7	.0030012	4 59.0	227 4 46.7	2 15 32.9	.9960129
17	14 38 38.34	13 9 7.5	.0037000	4 55.3	227 6 38.4	2 15 30.9	.9960224
18	14 38 50.64	13 10 20.8	.0043952	4 51.5	227 8 30.1	2 15 28.8	.9960319
19	14 39 3.28	13 11 35.5	.0050867	4 47.8	227 10 21.8	2 15 26.8	.9960413
20	14 39 16.25	13 12 51.6	.0057742	4 44.1	227 12 13.5	2 15 24.7	.9960508
21	14 39 29.54	13 14 9.0	.0064577	4 40.4	227 14 5.3	2 15 22.7	.9960603
22	14 39 43.17	13 15 27.9	.0071369	4 36.7	227 15 57.0	2 15 20.6	.9960697
23	14 39 57.13	13 16 48.1	.0078117	4 33.0	227 17 48.8	2 15 18.6	.9960792
24	14 40 11.42	13 18 9.7	.0084821	4 29.3	227 19 40.7	2 15 16.5	.9960886
25	14 40 26.03	13 19 32.5	.0091478	4 25.6	227 21 32.5	2 15 14.5	.9960981
26	14 40 40.96	13 20 56.7	.0098087	4 21.9	227 23 24.3	2 15 12.4	.9961075
27	14 40 56.20	13 22 22.2	.0104647	4 18.2	227 25 16.1	2 15 10.3	.9961169
28	14 41 11.75	13 23 48.9	.0111156	4 14.5	227 27 7.9	2 15 8.3	.9961263
29	14 41 27.62	13 25 16.8	.0117613	4 10.9	227 28 59.6	2 15 6.2	.9961357
30	14 41 43.79	13 26 46.0	.0124015	4 7.2	227 30 51.3	2 15 4.1	.9961451
31	14 42 0.26	13 28 16.3	.0130363	4 3.6	227 32 43.0	2 15 2.1	.9961545
32	14 42 17.04 S.	13 29 47.8	1.0136654	3 59.9	227 34 34.6	N. 2 15 0.0	0.9961639

SEPTEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ^{''}		^h ^m	[°] ['] ^{''}	[°] ['] ^{''}	
1	14 42 17.04	S. 13 29 47.8	1.0136654	3 59.9	227 34 34.6	N. 2 15 0.0	0.9961639
2	14 42 34.11	13 31 20.5	.0142887	3 56.3	227 36 26.2	2 14 57.9	.9961732
3	14 42 51.47	13 32 54.3	.0149062	3 52.6	227 38 17.8	2 14 55.8	.9961826
4	14 43 9.13	13 34 29.2	.0155176	3 49.0	227 40 9.5	2 14 53.8	.9961920
5	14 43 27.08	13 36 5.2	.0161227	3 45.3	227 42 1.1	2 14 51.7	.9962013
6	14 43 45.32	13 37 42.3	.0167214	3 41.7	227 43 52.8	2 14 49.6	.9962107
7	14 44 3.84	13 39 20.4	.0173137	3 38.1	227 45 44.5	2 14 47.5	.9962200
8	14 44 22.63	13 40 59.6	.0178995	3 34.5	227 47 36.2	2 14 45.4	.9962294
9	14 44 41.69	13 42 39.7	.0184785	3 30.9	227 49 28.0	2 14 43.3	.9962387
10	14 45 1.03	13 44 20.7	.0190508	3 27.3	227 51 19.7	2 14 41.2	.9962481
11	14 45 20.63	13 46 2.6	.0196163	3 23.6	227 53 11.4	2 14 39.1	.9962574
12	14 45 40.48	13 47 45.5	.0201749	3 20.0	227 55 3.1	2 14 37.0	.9962667
13	14 46 0.59	13 49 29.2	.0207265	3 16.4	227 56 54.7	2 14 34.9	.9962760
14	14 46 20.96	13 51 13.8	.0212710	3 12.8	227 58 46.2	2 14 32.8	.9962853
15	14 46 41.59	13 52 59.3	.0218082	3 9.3	228 0 37.7	2 14 30.7	.9962947
16	14 47 2.46	13 54 45.6	.0223381	3 5.7	228 2 29.3	2 14 28.6	.9963040
17	14 47 23.58	13 56 32.7	.0228606	3 2.1	228 4 20.8	2 14 26.5	.9963133
18	14 47 44.94	13 58 20.6	.0233757	2 58.5	228 6 12.4	2 14 24.4	.9963226
19	14 48 6.54	14 0 9.3	.0238831	2 55.0	228 8 4.1	2 14 22.3	.9963319
20	14 48 28.38	14 1 58.7	.0243829	2 51.4	228 9 55.7	2 14 20.1	.9963411
21	14 48 50.45	14 3 48.9	.0248750	2 47.8	228 11 47.4	2 14 18.0	.9963504
22	14 49 12.76	14 5 39.8	.0253592	2 44.3	228 13 39.1	2 14 15.9	.9963597
23	14 49 35.29	14 7 31.3	.0258357	2 40.7	228 15 30.7	2	.9963690
24	14 49 58.04	14 9 23.5	.0263042	2 37.1	228 17 22.4	2	.9963782
25	14 50 21.00	14 11 16.3	.0267646	2 33.6	228 19 14.0		.9963875
26	14 50 44.18	14 13 9.8	.0272168	2 30.0	228 21 5.5		.9963967
27	14 51 7.58	14 15 3.8	.0276608	2 26.5	228 22 57.0		.9964060
28	14 51 31.18	14 16 58.4	.0280965	2 23.0	228 24 48.1		.9964152
29	14 51 54.98	14 18 53.5	.0285235	2 19.4	228 26 40.1		
30	14 52 18.99	14 20 49.2	.0289418	2 15.9	228 28 31.5		
31	14 52 43.19	S. 14 22 45.3	1.0293515	2 12.4			

OCTOBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. Rad. V
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	14 52 43.19	S. 14 22 45.3	1.0293515	2 12.4	228 30 23.0	N. 2 13 56.7	0.9964
2	14 53 7.58	14 24 41.9	.0297524	2 8.8	228 32 14.5	2 13 54.5	.9964
3	14 53 32.16	14 26 39.0	.0301445	2 5.3	228 34 6.0	2 13 52.4	.9964
4	14 53 56.92	14 28 36.5	.0305276	2 1.8	228 35 57.6	2 13 50.2	.9964
5	14 54 21.86	14 30 34.4	.0309019	1 58.3	228 37 49.2	2 13 48.1	.9964
6	14 54 46.98	14 32 32.7	.0312671	1 54.8	228 39 40.9	2 13 45.9	.9964
7	14 55 12.27	14 34 31.3	.0316233	1 51.2	228 41 32.5	2 13 43.8	.9964
8	14 55 37.73	14 36 30.2	.0319704	1 47.7	228 43 24.1	2 13 41.6	.9964
9	14 56 3.35	14 38 29.4	.0323083	1 44.2	228 45 15.6	2 13 39.4	.9964
10	14 56 29.11	14 40 28.9	.0326371	1 40.7	228 47 7.1	2 13 37.3	.9964
11	14 56 55.03	14 42 28.6	.0329567	1 37.2	228 48 58.5	2 13 35.1	.9964
12	14 57 21.09	14 44 28.5	.0332669	1 33.7	228 50 49.9	2 13 32.9	.9964
13	14 57 47.30	14 46 28.6	.0335679	1 30.2	228 52 41.3	2 13 30.8	.9964
14	14 58 13.65	14 48 28.9	.0338595	1 26.7	228 54 32.8	2 13 28.6	.9964
15	14 58 40.13	14 50 29.4	.0341416	1 23.2	228 56 24.2	2 13 26.4	.9964
16	14 59 6.76	14 52 30.1	.0344143	1 19.7	228 58 15.7	2 13 24.2	.9964
17	14 59 33.52	14 54 30.9	.0346776	1 16.3	229 0 7.3	2 13 22.1	.9964
18	15 0 0.41	14 56 31.8	.0349313	1 12.8	229 1 58.8	2 13 19.9	.9964
19	15 0 27.42	14 58 32.9	.0351754	1 9.3	229 3 50.4	2 13 17.7	.9964
20	15 0 54.56	15 0 34.0	.0354099	1 5.8	229 5 42.0	2 13 15.5	.9964
21	15 1 21.81	15 2 35.1	.0356347	1 2.3	229 7 33.5	2 13 13.3	.9964
22	15 1 49.16	15 4 36.3	.0358498	0 58.8	229 9 25.0	2 13 11.1	.9964
23	15 2 16.62	15 6 37.5	.0360550	0 55.4	229 11 16.5	2 13 8.9	.9964
24	15 2 44.18	15 8 38.7	.0362505	0 51.9	229 13 7.9	2 13 6.7	.9964
25	15 3 11.84	15 10 39.8	.0364360	0 48.4	229 14 59.3	2 13 4.5	.9964
26	15 3 39.60	15 12 40.8	.0366116	0 44.9	229 16 50.7	2 13 2.3	.9964
27	15 4 7.44	15 14 41.8	.0367772	0 41.4	229 18 42.0	2 13 0.1	.9964
28	15 4 35.37	15 16 42.6	.0369327	0 38.0	229 20 33.4	2 12 57.9	.9964
29	15 5 3.39	15 18 43.4	.0370781	0 34.6	229 22 24.8	2 12 55.7	.9964
30	15 5 31.48	15 20 44.0	.0372134	0 31.1	229 24 16.3	2 12 53.5	.9964
31	15 5 59.64	15 22 44.4	.0373387	0 27.6	229 26 7.8	2 12 51.3	.9964
32	15 6 27.87	S. 15 24 44.6	1.0374538	0 24.2	229 27 59.3	N. 2 12 49.1	0.9964

NOVEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	15 6 27.87	S. 15 24 44.6	1.0374538	0 24.2	229 27 59.3	N. 2 12 49.1	0.9967275
2	15 6 56.16	15 26 44.6	.0375587	0 20.7	229 29 50.8	2 12 46.8	.9967366
3	15 7 24.51	15 28 44.4	.0376535	0 17.2	229 31 42.3	2 12 44.6	.9967457
4	15 7 52.90	15 30 43.9	.0377381	0 13.8	229 33 33.8	2 12 42.4	.9967548
5	15 8 21.34	15 32 43.1	.0378125	0 10.3	229 35 25.3	2 12 40.2	.9967639
6	15 8 49.83	15 34 42.0	.0378767	0 6.8	229 37 16.7	2 12 38.0	.9967729
7	15 9 18.35	15 36 40.6	.0379308	{ ⁰ 3.4}	229 39 8.1	2 12 35.7	.9967820
8	15 9 46.90	15 38 38.8	.0379745	23 56.4	229 40 59.5	2 12 33.5	.9967911
9	15 10 15.48	15 40 36.7	.0380081	23 53.0	229 42 50.8	2 12 31.3	.9968002
10	15 10 44.09	15 42 34.2	.0380315	23 49.5	229 44 42.1	2 12 29.0	.9968092
11	15 11 12.72	15 44 31.3	.0380447	23 46.1	229 46 33.5	2 12 26.8	.9968183
12	15 11 41.36	15 46 28.0	.0380477	23 42.6	229 48 24.9	2 12 24.6	.9968273
13	15 12 10.02	15 48 24.2	.0380405	23 39.2	229 50 16.3	2 12 22.3	.9968364
14	15 12 38.69	15 50 20.0	.0380230	23 35.7	229 52 7.8	2 12 20.1	.9968454
15	15 13 7.36	15 52 15.4	.0379954	23 32.2	229 53 59.3	2 12 17.9	.9968544
16	15 13 36.04	15 54 10.3	.0379576	23 28.8	229 55 50.8	2 12 15.6	.9968635
17	15 14 4.71	15 56 4.8	.0379095	23 25.3	229 57 42.3	2 12 13.3	.9968725
18	15 14 33.38	15 57 58.7	.0378512	23 21.9	229 59 33.7	2 12 11.1	.9968815
19	15 15 2.03	15 59 52.1	.0377826	23 18.4	230 1 25.1	2 12 8.8	.9968905
20	15 15 30.66	16 1 45.0	.0377039	23 15.0	230 3 16.5	2 12 6.6	.9968995
21	15 15 59.27	16 3 37.3	.0376149	23 11.5	230 5 7.8	2 12 4.3	.9969085
22	15 16 27.85	16 5 29.0	.0375156	23 8.1	230 6 59.1	2 12 2.1	.9969175
23	15 16 56.39	16 7 20.1	.0374061	23 4.6	230 8 50.4	2 11 59.8	.9969265
24	15 17 24.90	16 9 10.6	.0372863	23 1.1	230 10 41.7	2 11 57.5	.9969355
25	15 17 53.37	16 11 0.4	.03715		230 12 33.0	2 11 55.3	.9969445
26	15 18 21.79	16 12 49.5	.037		230 14 24.4	2 11 53.0	.9969534
27	15 18 50.15	16 14 38.0	.036		230 16 15.7	2 11 50.7	.9969624
28	15 19 18.46	16 16 27.0	.034		230 18 7.1	2 11 48.4	.9969713
29	15 19 46.71	16 18 16.0	.034		230 19 58.6	2 11 46.1	.9969803
30	15 20 14.89	16 19 5.0	.035			2 11 43.9	.9969892
31	15 20 43.00	S. 16 21 54.0	1.03			2 11 41.6	0.9969981

DECEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vec.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	<i>h m s</i>	<i>° ′ ″</i>		<i>h m</i>	<i>° ′ ″</i>	<i>° ′ ″</i>	
1	15 20 43.00	S. 16 21 44.8	1.0361613	22 36.9	230 23 41.5	N. 2 11 41.6	0.99699
2	15 21 11.03	16 23 29.7	.0359600	22 33.4	230 25 32.9	2 11 39.3	.99700
3	15 21 38.98	16 25 13.7	.0357485	22 30.0	230 27 24.2	2 11 37.0	.99701
4	15 22 6.83	16 26 57.0	.0355271	22 26.5	230 29 15.5	2 11 34.7	.99702
5	15 22 34.59	16 28 39.4	.0352957	22 23.0	230 31 6.8	2 11 32.4	.99703
6	15 23 2.25	16 30 21.0	.0350544	22 19.5	230 32 58.0	2 11 30.1	.99704
7	15 23 29.81	16 32 1.7	.0348032	22 16.1	230 34 49.2	2 11 27.8	.99705
8	15 23 57.26	16 33 41.6	.0345421	22 12.6	230 36 40.5	2 11 25.6	.99706
9	15 24 24.61	16 35 20.6	.0342712	22 9.1	230 38 31.8	2 11 23.3	.99706
10	15 24 51.85	16 36 58.7	.0339907	22 5.6	230 40 23.1	2 11 21.0	.99707
11	15 25 18.97	16 38 35.9	.0337004	22 2.1	230 42 14.5	2 11 18.7	.99708
12	15 25 45.96	16 40 12.2	.0334005	21 58.7	230 44 5.9	2 11 16.3	.99709
13	15 26 12.82	16 41 47.6	.0330910	21 55.2	230 45 57.3	2 11 14.0	.99710
14	15 26 39.55	16 43 22.1	.0327720	21 51.7	230 47 48.7	2 11 11.7	.99711
15	15 27 6.14	16 44 55.7	.0324434	21 48.2	230 49 40.0	2 11 9.4	.99712
16	15 27 32.58	16 46 28.5	.0321054	21 44.7	230 51 31.3	2 11 7.1	.99713
17	15 27 58.87	16 48 0.3	.0317581	21 41.2	230 53 22.6	2 11 4.8	.99714
18	15 28 25.01	16 49 31.2	.0314014	21 37.7	230 55 13.9	2 11 2.5	.99714
19	15 28 50.99	16 51 1.1	.0310353	21 34.2	230 57 5.1	2 11 0.2	.99715
20	15 29 16.81	16 52 30.0	.0306600	21 30.7	230 58 56.2	2 10 57.9	.99716
21	15 29 42.46	16 53 57.9	.0302755	21 27.2	231 0 47.4	2 10 55.5	.99717
22	15 30 7.94	16 55 24.7	.0298817	21 23.7	231 2 38.6	2 10 53.2	.99718
23	15 30 33.25	16 56 50.5	.0294787	21 20.1	231 4 29.9	2 10 50.9	.99719
24	15 30 58.37	16 58 15.2	.0290667	21 16.6	231 6 21.1	2 10 48.6	.99720
25	15 31 23.31	16 59 38.8	.0286456	21 13.1	231 8 12.4	2 10 46.2	.99721
26	15 31 48.06	17 1 1.3	.0282156	21 9.6	231 10 3.7	2 10 43.9	.99721
27	15 32 12.60	17 2 22.7	.0277767	21 6.0	231 11 55.1	2 10 41.5	.99722
28	15 32 36.94	17 3 43.0	.0273292	21 2.5	231 13 46.4	2 10 39.2	.99723
29	15 33 1.07	17 5 2.3	.0268730	20 59.0	231 15 37.7	2 10 36.8	.99724
30	15 33 24.98	17 6 20.4	.0264083	20 55.4	231 17 29.0	2 10 34.5	.99725
31	15 33 48.68	17 7 37.4	.0259351	20 51.9	231 19 20.2	2 10 32.1	.99726
32	15 34 12.16	S. 17 8 53.2	1.0254536	20 48.3	231 21 11.3	N. 2 10 29.8	0.99727

JANUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	22 16 9.03	S. 11 33 14.5	1.3152071	3 31.9	333 56 16.3	S. 0 45 54.5	1.3022611
2	22 16 18.44	11 32 19.7	1.3154881	3 28.1	333 56 55.0	0 45 54.6	1.3022620
3	22 16 27.99	11 31 24.1	1.3157649	3 24.3	333 57 33.8	0 45 54.7	1.3022630
4	22 16 37.67	11 30 27.8	1.3160376	3 20.6	333 58 12.6	0 45 54.8	1.3022639
5	22 16 47.49	11 29 30.8	1.3163061	3 16.8	333 58 51.4	0 45 54.9	1.3022648
6	22 16 57.43	11 28 33.0	1.3165702	3 13.0	333 59 30.2	0 45 54.9	1.3022658
7	22 17 7.50	11 27 34.5	1.3168299	3 9.3	334 0 9.0	0 45 55.0	1.3022667
8	22 17 17.69	11 26 35.3	1.3170851	3 5.5	334 0 47.8	0 45 55.1	1.3022676
9	22 17 28.01	11 25 35.5	1.3173359	3 1.8	334 1 26.5	0 45 55.2	1.3022686
10	22 17 38.44	11 24 35.0	1.3175820	2 58.0	334 2 5.2	0 45 55.3	1.3022695
11	22 17 48.99	11 23 33.8	1.3178234	2 54.2	334 2 43.8	0 45 55.3	1.3022704
12	22 17 59.66	11 22 32.0	1.3180602	2 50.5	334 3 22.5	0 45 55.4	1.3022713
13	22 18 10.43	11 21 29.5	1.3182921	2 46.7	334 4 1.1	0 45 55.5	1.3022723
14	22 18 21.32	11 20 26.4	1.3185193	2 43.0	334 4 39.8	0 45 55.6	1.3022732
15	22 18 32.31	11 19 22.7	1.3187416	2 39.2	334 5 18.5	0 45 55.7	1.3022741
16	22 18 43.41	11 18 18.4	1.3189590	2 35.5	334 5 57.2	0 45 55.8	1.3022751
17	22 18 54.61	11 17 13.6	1.3191714	2 31.7	334 6 36.0	0 45 55.8	1.3022760
18	22 19 5.91	11 16 8.1	1.3193788	2 28.0	334 7 14.8	0 45 55.9	1.3022770
19	22 19 17.30	11 15 2.1	1.3195812	2 24.2	334 7 53.6	0 45 56.0	1.3022779
20	22 19 28.79	11 13 55.6	1.3197786	2 20.5	334 8 32.4	0 45 56.1	1.3022788
21	22 19 40.37	11 12 48.6	1.3199708	2 16.8	334 9 11.2	0 45 56.2	1.3022798
22	22 19 52.03	11 11 41.0	1.3201579	2 13.0	334 9 49.9	0 45 56.2	1.3022807
23	22 20 3.78	11 10 33.0	1.3203398	2 9.3	334 10 28.6	0 45 56.3	1.3022816
24	22 20 15.62	11 9 24.5	1.320516		334 11 7.3	0 45 56.4	1.3022826
25	22 20 27.53	11 8 15.6	1.3206		334 11 46.0	0 45 56.5	1.3022835
26	22 20 39.52	11 7 6.3	1.3208		334 12 24.7	0 45 56.6	1.3022844
27	22 20 51.59	11 5 56.5	1.3209		334 13 3.4	0 45 56.7	1.3022854
28	22 21 3.73	11 4 46.3			334 13 42.1	0 45 56.7	1.3022863
29	22 21 15.94	11 3 35.7			334 14 20.8	0 45 56.8	1.3022872
30	22 21 28.22	11 2 24.7			334 14 59.5	0 45 56.9	1.3022882
31	22 21 40.56	11 1 13.3			334 15 38.2	0 45 57.0	1.3022891
32	22 21 52.97	S. 11 0 1.5			334 16 16.9	7.1	1.3022900

FEBRUARY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log Rad.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	22 21 52.97	S. 11 0 1.5	1.3217375	1 35.7	334 16 16.6	S. 0 45 57.1	1.301
2	22 22 5.45	10 58 49.4	.3218655	1 32.0	334 16 55.4	0 45 57.1	.301
3	22 22 17.98	10 57 37.0	.3219878	1 28.3	334 17 34.2	0 45 57.2	.301
4	22 22 30.56	10 56 24.2	.3221045	1 24.5	334 18 12.9	0 45 57.3	.301
5	22 22 43.20	10 55 11.2	.3222156	1 20.8	334 18 51.6	0 45 57.4	.301
6	22 22 55.88	10 53 57.8	.3223209	1 17.1	334 19 30.3	0 45 57.5	.301
7	22 23 8.60	10 52 44.2	.3224206	1 13.4	334 20 8.9	0 45 57.5	.301
8	22 23 21.36	10 51 30.4	.3225145	1 9.7	334 20 47.5	0 45 57.6	.301
9	22 23 34.16	10 50 16.3	.3226027	1 5.9	334 21 26.1	0 45 57.7	.301
10	22 23 47.00	10 49 2.0	.3226851	1 2.2	334 22 4.7	0 45 57.8	.301
11	22 23 59.87	10 47 47.5	.3227618	0 58.5	334 22 43.3	0 45 57.8	.301
12	22 24 12.78	10 46 32.9	.3228327	0 54.8	334 23 22.0	0 45 57.9	.301
13	22 24 25.73	10 45 18.1	.3228979	0 51.1	334 24 0.7	0 45 58.0	.301
14	22 24 38.70	10 44 3.1	.3229574	0 47.3	334 24 39.5	0 45 58.1	.301
15	22 24 51.69	10 42 48.0	.3230110	0 43.6	334 25 18.2	0 45 58.2	.301
16	22 25 4.70	10 41 32.8	.3230590	0 39.9	334 25 57.0	0 45 58.2	.301
17	22 25 17.72	10 40 17.4	.3231011	0 36.2	334 26 35.7	0 45 58.3	.301
18	22 25 30.75	10 39 2.0	.3231374	0 32.5	334 27 14.4	0 45 58.4	.301
19	22 25 43.79	10 37 46.5	.3231680	0 28.8	334 27 53.1	0 45 58.5	.301
20	22 25 56.85	10 36 31.0	.3231927	0 25.0	334 28 31.7	0 45 58.6	.301
21	22 26 9.91	10 35 15.4	.3232117	0 21.3	334 29 10.3	0 45 58.6	.301
22	22 26 22.97	10 33 59.8	.3232249	0 17.6	334 29 48.9	0 45 58.7	.301
23	22 26 36.03	10 32 44.1	.3232323	0 13.9	334 30 27.4	0 45 58.8	.301
24	22 26 49.10	10 31 28.5	.3232339	0 10.2	334 31 6.0	0 45 58.9	.301
25	22 27 2.16	10 30 12.9	.3232297	0 6.5	334 31 44.6	0 45 59.0	.302
26	22 27 15.22	10 28 57.3	.3232197	$\left\{ \begin{smallmatrix} 0 \\ 23 \end{smallmatrix} \right\}$	334 32 23.2	0 45 59.0	.302
27	22 27 28.27	10 27 41.8	.3232039	23 55.3	334 33 1.9	0 45 59.1	.302
28	22 27 41.31	10 26 26.3	.3231823	23 51.6	334 33 40.6	0 45 59.2	.302
29	22 27 54.34	S. 10 25 10.9	1.3231550	23 47.9	334 34 19.4	S. 0 45 59.3	1.302

MARCH, 1837.

MEAN TIME.

Geocentric.				Heliocentric.		
Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
h m s	° ' "		h m	° ' "	° ' "	
1 22 27 54.34	S. 10 25 10.9	1.3231550	23 47.9	334 34 19.4	S. 0 45 59.3	1.3023158
2 22 28 7.35	10 23 55.6	1.3231219	23 44.2	334 34 58.1	0 45 59.4	1.3023167
3 22 28 20.34	10 22 40.4	1.3230831	23 40.5	334 35 36.8	0 45 59.4	1.3023176
4 22 28 33.30	10 21 25.3	1.3230385	23 36.7	334 36 15.5	0 45 59.5	1.3023185
5 22 28 46.23	10 20 10.4	1.3229881	23 33.0	334 36 54.1	0 45 59.6	1.3023194
6 22 28 59.14	10 18 55.7	1.3229321	23 29.3	334 37 32.7	0 45 59.7	1.3023203
7 22 29 12.02	10 17 41.1	1.3228704	23 25.6	334 38 11.3	0 45 59.7	1.3023212
8 22 29 24.86	10 16 26.7	1.3228029	23 21.9	334 38 49.8	0 45 59.8	1.3023220
9 22 29 37.67	10 15 12.5	1.3227297	23 18.2	334 39 28.4	0 45 59.9	1.3023229
0 22 29 50.44	10 13 58.6	1.3226509	23 14.4	334 40 7.0	0 46 0.0	1.3023238
1 22 30 3.16	10 12 44.9	1.3225664	23 10.7	334 40 45.6	0 46 0.0	1.3023247
2 22 30 15.84	10 11 31.5	1.3224763	23 7.0	334 41 24.3	0 46 0.1	1.3023256
3 22 30 28.48	10 10 18.4	1.3223807	23 3.2	334 42 3.0	0 46 0.2	1.3023265
4 22 30 41.07	10 9 5.5	1.3222795	22 59.5	334 42 41.7	0 46 0.3	1.3023274
5 22 30 53.60	10 7 52.9	1.3221728	22 55.8	334 43 20.5	0 46 0.3	1.3023283
6 22 31 6.08	10 6 40.7	1.3220607	22 52.1	334 43 59.2	0 46 0.4	1.3023292
7 22 31 18.50	10 5 28.8	1.3219432	22 48.3	334 44 37.9	0 46 0.5	1.3023301
8 22 31 30.85	10 4 17.3	1.3218202	22 44.6	334 45 16.5	0 46 0.6	1.3023309
9 22 31 43.15	10 3 6.1	1.3216919	22 40.9	334 45 55.2	0 46 0.6	1.3023318
10 22 31 55.38	10 1 55.3	1.3215582	22 37.2	334 46 33.8	0 46 0.7	1.3023327
11 22 32 7.54	10 0 44.9	1.3214193	22 33.4	334 47 12.3	0 46 0.8	1.3023336
12 22 32 19.63	9 59 35.0	1.3212751	22 29.7	334 47 50.8	0 46 0.9	1.3023345
13 22 32 31.65	9 58 25.4	1.3211257	22 26.0	334 48 29.3	0 46 0.9	1.3023354
14 22 32 43.60	9 57 16.3	1.3209712	22 22		0 46 1.0	1.3023363
15 22 32 55.47	9 56 7.7	1.3208114	22		1.1	1.3023372
16 22 33 7.27	9 54 59.5	1.3206468			1.2	1.3023381
17 22 33 18.99	9 53 51.8	1.3204777			1.2	1.3023390
18 22 33 30.62	9 52 44.5	1.3203041			1.3	1.3023398
19 22 33 42.17	9 51 37.7	1.3201259			1.4	1.3023407
20 22 33 53.63	9 50 31.5	1.3199431			1.5	1.3023416
21 22 34 4.99	9 49 25.8	1.3197557				1.3023425
22 22 34 16.27	S. 9 48 20.7	1.3195637				1.3023434

APRIL, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	R	
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.		
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]		
1	22 34 16.27	S. 9 48 20.7	1.3195519	21 52.3	334 54 17.4	S. 0 46 1.6	1.1	
2	22 34 27.45	9 47 16.1	1.3193522	21 48.6	334 54 56.0	0 46 1.7		
3	22 34 38.52	9 46 12.2	1.3191478	21 44.8	334 55 34.5	0 46 1.7		
4	22 34 49.50	9 45 8.8	1.3189386	21 41.1	334 56 13.0	0 46 1.8		
5	22 35 0.38	9 44 6.0	1.3187247	21 37.3	334 56 51.6	0 46 1.9		
6	22 35 11.15	9 43 3.8	1.3185061	21 33.6	334 57 30.2	0 46 2.0		
7	22 35 21.82	9 42 2.3	1.3182829	21 29.8	334 58 8.8	0 46 2.1		
8	22 35 32.38	9 41 1.4	1.3180552	21 26.1	334 58 47.4	0 46 2.1		
9	22 35 42.83	9 40 1.2	1.3178230	21 22.3	334 59 26.1	0 46 2.2		
10	22 35 53.17	9 39 1.6	1.3175864	21 18.5	335 0 4.8	0 46 2.3		
11	22 36 3.40	9 38 2.8	1.3173454	21 14.8	335 0 43.6	0 46 2.3		
12	22 36 13.50	9 37 4.7	1.3171001	21 11.0	335 1 22.3	0 46 2.4		
13	22 36 23.49	9 36 7.3	1.3168506	21 7.2	335 2 1.0	0 46 2.5		
14	22 36 33.35	9 35 10.6	1.3165971	21 3.5	335 2 39.7	0 46 2.6		
15	22 36 43.08	9 34 14.6	1.3163395	20 59.7	335 3 18.3	0 46 2.6		
16	22 36 52.69	9 33 19.4	1.3160779	20 55.9	335 3 56.9	0 46 2.7		
17	22 37 2.17	9 32 25.0	1.3158124	20 52.1	335 4 35.5	0 46 2.8		
18	22 37 11.52	9 31 31.3	1.3155430	20 48.4	335 5 14.1	0 46 2.9		
19	22 37 20.75	9 30 38.5	1.3152698	20 44.6	335 5 52.6	0 46 2.9		
20	22 37 29.85	9 29 46.4	1.3149928	20 40.8	335 6 31.2	0 46 3.0		
21	22 37 38.81	9 28 55.1	1.3147122	20 37.0	335 7 9.8	0 46 3.1		
22	22 37 47.63	9 28 4.6	1.3144279	20 33.2	335 7 48.5	0 46 3.2		
23	22 37 56.32	9 27 14.9	1.3141400	20 29.4	335 8 27.2	0 46 3.2		
24	22 38 4.87	9 26 26.1	1.3138486	20 25.7	335 9 5.9	0 46 3.3		
25	22 38 13.28	9 25 38.1	1.3135538	20 21.9	335 9 44.7	0 46 3.4		
26	22 38 21.54	9 24 51.0	1.3132555	20 18.1	335 10 23.5	0 46 3.4		
27	22 38 29.65	9 24 4.8	1.3129539	20 14.3	335 11 2.2	0 46 3.5		
28	22 38 37.62	9 23 19.5	1.3126491	20 10.5	335 11 40.9	0 46 3.6		
29	22 38 45.44	9 22 35.1	1.3123411	20 6.7	335 12 19.5	0 46 3.6		
30	22 38 53.11	9 21 51.5	1.3120300	20 2.8	335 12 58.1	0 46 3.7		
31	22 39 0.63	S. 9 21 8.9	1.3117159	19 59.0	335 13 36.6	S. 0 46 3.8	1.1	

MAY, 1837.

MEAN TIME.

Geocentric.				Heliocentric.		
Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
<i>h m s</i>	<i>° ′ ″</i>		<i>h m</i>	<i>° ′ ″</i>	<i>° ′ ″</i>	
2 39 0'63	S. 9 21 8'9	1'3117159	19 59'0	335 13 36'6	S. 0 46 3'8	1'3023700
2 39 8'01	9 20 27'1	'3113390	19 55'2	335 14 15'2	0 46 3'9	'3023709
2 39 15'23	9 19 46'2	'3110794	19 51'4	335 14 53'8	0 46 3'9	'3023717
2 39 22'30	9 19 6'2	'3107570	19 47'6	335 15 32'4	0 46 4'0	'3023726
2 39 29'22	9 18 27'2	'3104320	19 43'7	335 16 11'1	0 46 4'1	'3023734
2 39 35'98	9 17 49'2	'3101044	19 39'9	335 16 49'8	0 46 4'1	'3023743
2 39 42'57	9 17 12'1	'3097745	19 36'1	335 17 28'6	0 46 4'2	'3023752
2 39 49'00	9 16 36'0	'3094420	19 32'3	335 18 7'3	0 46 4'3	'3023760
2 39 55'27	9 16 0'9	'3091071	19 28'4	335 18 46'1	0 46 4'3	'3023769
2 40 1'37	9 15 26'8	'3087699	19 24'6	335 19 24'9	0 46 4'4	'3023777
2 40 7'31	9 14 53'7	'3084306	19 20'8	335 20 3'6	0 46 4'5	'3023786
2 40 13'08	9 14 21'6	'3080892	19 16'9	335 20 42'3	0 46 4'5	'3023795
2 40 18'67	9 13 50'6	'3077459	19 13'1	335 21 20'9	0 46 4'6	'3023803
2 40 24'10	9 13 20'6	'3074008	19 9'3	335 21 59'5	0 46 4'7	'3023812
2 40 29'35	9 12 51'6	'3070540	19 5'4	335 22 38'1	0 46 4'7	'3023820
2 40 34'44	9 12 23'6	'3067054	19 1'6	335 23 16'7	0 46 4'8	'3023829
2 40 39'35	9 11 56'7	'3063553	18 57'7	335 23 55'3	0 46 4'9	'3023838
2 40 44'09	9 11 30'8	'3060038	18 53'9	335 24 34'0	0 46 4'9	'3023846
2 40 48'66	9 11 5'9	'3056508	18 50'0	335 25 12'7	0 46 5'0	'3023855
2 40 53'07	9 10 42'0	'3052964	18 46'1	335 25 51'4	0 46 5'1	'3023863
2 40 57'30	9 10 19'2	'3049408	18 42'3	335 26 30'2	0 46 5'2	'3023872
2 41 1'36	9 9 57'4	'3045840	18 38'4	335 27 9'0	0 46 5'2	'3023881
2 41 5'24	9 9 36'7	'3042262	18 34'5	335 27 47'8	0 46 5'3	'3023889
2 41 8'95	9 9 17'1	'3038674	18 30'7	335 28 26'5	0 46 5'4	'3023898
2 41 12'47	9 8 58'5	'3035076	18	29 5'2	0 46 5'4	'3023906
2 41 15'81	9 8 41'0	'3031470	1	29 43'9	0 46 5'5	'3023915
2 41 18'97	9 8 24'6	'3027858	1	30 22'5	0 46 5'6	'3023924
2 41 21'95	9 8 9'2	'3024240		31 1'2	0 46 5'6	'3023932
2 41 24'75	9 7 55'0	'3020616		31 39'8	0 46 5'7	'3023941
2 41 27'37	9 7 41'8	'3016988		31 48'4	0 46 5'8	'3023949
2 41 29'81	9 7 29'7	'3013358		32 0'0	0 46 5'8	'3023958
2 41 32'07	S. 9	1'3009721			S. 0 46 5'9	1'3023966

JUNE, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	R	
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.		
	^h ^m ^s	[°] ['] ^{''}		^h ^m	[°] ['] ^{''}	[°] ['] ^{''}		
1	22 41 32.07	S. 9 7 18.8	1.3009728	17 59.6	335 33 35.7	S. 0 46 5.9	1.3	
2	22 41 34.15	9 7 8.9	.3006097	17 55.7	335 34 14.4	0 46 6.0	.3	
3	22 41 36.05	9 7 0.2	.3002467	17 51.8	335 34 53.2	0 46 6.0	.3	
4	22 41 37.77	9 6 52.5	.2998839	17 47.9	335 35 32.0	0 46 6.1	.3	
5	22 41 39.30	9 6 46.0	.2995214	17 44.0	335 36 10.8	0 46 6.2	.3	
6	22 41 40.65	9 6 40.5	.2991592	17 40.1	335 36 49.6	0 46 6.3	.3	
7	22 41 41.81	9 6 36.1	.2987974	17 36.1	335 37 28.3	0 46 6.3	.3	
8	22 41 42.79	9 6 32.9	.2984361	17 32.2	335 38 7.0	0 46 6.4	.3	
9	22 41 43.58	9 6 30.7	.2980755	17 28.3	335 38 45.7	0 46 6.4	.3	
10	22 41 44.18	9 6 29.6	.2977157	17 24.4	335 39 24.3	0 46 6.5	.3	
11	22 41 44.61	9 6 29.6	.2973567	17 20.4	335 40 3.0	0 46 6.6	.3	
12	22 41 44.85	9 6 30.7	.2969986	17 16.5	335 40 41.6	0 46 6.6	.3	
13	22 41 44.91	9 6 32.9	.2966417	17 12.6	335 41 20.2	0 46 6.7	.3	
14	22 41 44.79	9 6 36.2	.2962861	17 8.6	335 41 58.8	0 46 6.8	.3	
15	22 41 44.49	9 6 40.5	.2959318	17 4.7	335 42 37.5	0 46 6.9	.3	
16	22 41 44.01	9 6 46.0	.2955789	17 0.8	335 43 16.2	0 46 6.9	.3	
17	22 41 43.35	9 6 52.5	.2952275	16 56.8	335 43 55.0	0 46 7.0	.3	
18	22 41 42.52	9 7 0.0	.2948777	16 52.9	335 44 33.8	0 46 7.1	.3	
19	22 41 41.51	9 7 8.6	.2945296	16 48.9	335 45 12.6	0 46 7.1	.3	
20	22 41 40.31	9 7 18.2	.2941832	16 44.9	335 45 51.4	0 46 7.2	.3	
21	22 41 38.94	9 7 28.9	.2938387	16 41.0	335 46 30.1	0 46 7.3	.3	
22	22 41 37.39	9 7 40.7	.2934963	16 37.0	335 47 8.8	0 46 7.3	.3	
23	22 41 35.67	9 7 53.5	.2931559	16 33.1	335 47 47.5	0 46 7.4	.3	
24	22 41 33.76	9 8 7.4	.2928177	16 29.1	335 48 26.1	0 46 7.4	.3	
25	22 41 31.68	9 8 22.3	.2924818	16 25.1	335 49 4.7	0 46 7.5	.3	
26	22 41 29.42	9 8 38.3	.2921484	16 21.2	335 49 43.3	0 46 7.6	.3	
27	22 41 26.99	9 8 55.3	.2918175	16 17.2	335 50 22.0	0 46 7.7	.3	
28	22 41 24.39	9 9 13.3	.2914892	16 13.2	335 51 0.7	0 46 7.7	.3	
29	22 41 21.62	9 9 32.3	.2911636	16 9.3	335 51 39.4	0 46 7.8	.3	
30	22 41 18.67	9 9 52.3	.2908408	16 5.3	335 52 18.1	0 46 7.9	.3	
31	22 41 15.56	S. 9 10 13.3	1.2905210	16 1.3	335 52 56.9	S. 0 46 7.9	1.3	

JULY, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	22 41 15.56	S. 9 10 13.3	1.2905210	16 1.3	335 52 56.9	S. 0 46 7.9	1.3024218
2	22 41 12.28	9 10 35.3	.2902043	15 57.3	335 53 35.7	0 46 8.0	.3024227
3	22 41 8.83	9 10 58.2	.2898907	15 53.3	335 54 14.5	0 46 8.1	.3024235
4	22 41 5.21	9 11 22.1	.2895803	15 49.3	335 54 53.2	0 46 8.1	.3024244
5	22 41 1.43	9 11 47.0	.2892734	15 45.3	335 55 31.9	0 46 8.2	.3024252
6	22 40 57.49	9 12 12.8	.2889699	15 41.3	335 56 10.6	0 46 8.2	.3024260
7	22 40 53.38	9 12 39.6	.2886701	15 37.3	335 56 49.3	0 46 8.3	.3024269
8	22 40 49.11	9 13 7.4	.2883740	15 33.3	335 57 27.9	0 46 8.4	.3024277
9	22 40 44.68	9 13 36.0	.2880816	15 29.3	335 58 6.5	0 46 8.5	.3024286
10	22 40 40.10	9 14 5.6	.2877932	15 25.3	335 58 45.1	0 46 8.5	.3024294
11	22 40 35.36	9 14 36.0	.2875087	15 21.3	335 59 23.8	0 46 8.6	.3024302
12	22 40 30.48	9 15 7.3	.2872284	15 17.2	336 0 2.4	0 46 8.6	.3024311
13	22 40 25.45	9 15 39.4	.2869521	15 13.2	336 0 41.1	0 46 8.7	.3024319
14	22 40 20.27	9 16 12.4	.2866800	15 9.2	336 1 19.8	0 46 8.8	.3024327
15	22 40 14.95	9 16 46.2	.2864123	15 5.2	336 1 58.6	0 46 8.8	.3024336
16	22 40 9.49	9 17 20.8	.2861489	15 1.2	336 2 37.4	0 46 8.9	.3024344
17	22 40 3.88	9 17 56.3	.2858901	14 57.1	336 3 16.2	0 46 9.0	.3024353
18	22 39 58.14	9 18 32.5	.2856358	14 53.1	336 3 54.9	0 46 9.0	.3024361
19	22 39 52.25	9 19 9.5	.2853862	14 49.1	336 4 33.6	0 46 9.1	.3024369
20	22 39 46.23	9 19 47.3	.2851415	14 45.1	336 5 12.3	0 46 9.2	.3024377
21	22 39 40.08	9 20 25.9	.2849015	14 41.0	336 5 50.9	0 46 9.2	.3024386
22	22 39 33.79	9 21 5.2	.2846665	14 37.0	336 6 29.4	0 46 9.3	.3024395
23	22 39 27.38	9 21 45.2	.2844365	14 32.9	336 7 7.9	0 46 9.4	.3024403
24	22 39 20.84	9 22 25.9	.2842116	14 28.9	336 7 46.4	0 46 9.4	.3024411
25	22 39 14.18	9 23 7.3	.2839917	14 24.9	336 8 24.9	0 46 9.5	.3024420
26	22 39 7.40	9 23 49.3	.2837771	14 20.8	336 9 3.4	0 46 9.5	.3024428
27	22 39 0.50	9 24 32.0	.2835678	14 16.8	336 9 41.9	0 46 9.6	.3024436
28	22 38 53.48	9 25 15.4	.2833628	14 12.7	336 10 20.4	0 46 9.7	.3024445
29	22 38 46.35	9 25 59.3	.2831631	14 8.7	336 11 0.0	0 46 9.8	.3024453
30	22 38 39.11	9 26 43.9	.2829687	14 4.6	336 11 38.5	0 46 9.8	.3024461
31	22 38 31.76	9 27 29.1	.2827795	14 0.6	336 12 17.0	0 46 9.9	.3024469
32	22 38 24.30	S. 9 28 14.9	1.2825952	13 56.5	336 12 55.5	0 46 9.9	.3024477

AUGUST, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	R
				Passage.			
	Noon.	Noon.	Noon.		Noon.	Noon.	
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	22 38 24.30	S. 9 28 14.9	1.2826041	13 56.5	336 12 56.4	S. 0 46 9.9	1.3
2	22 38 16.74	9 29 1.3	.2824286	13 52.4	336 13 35.1	0 46 10.0	.3
3	22 38 9.08	9 29 48.2	.2822590	13 48.4	336 14 13.7	0 46 10.1	.3
4	22 38 1.33	9 30 35.6	.2820953	13 44.3	336 14 52.3	0 46 10.1	.3
5	22 37 53.48	9 31 23.5	.2819376	13 40.3	336 15 30.9	0 46 10.2	.3
6	22 37 45.55	9 32 11.9	.2817858	13 36.2	336 16 9.4	0 46 10.2	.3
7	22 37 37.53	9 33 0.7	.2816401	13 32.1	336 16 48.0	0 46 10.3	.3
8	22 37 29.43	9 33 49.9	.2815006	13 28.1	336 17 26.6	0 46 10.4	.3
9	22 37 21.25	9 34 39.5	.2813671	13 24.0	336 18 5.3	0 46 10.4	.3
10	22 37 13.00	9 35 29.5	.2812399	13 19.9	336 18 43.9	0 46 10.5	.3
11	22 37 4.68	9 36 19.9	.2811189	13 15.9	336 19 22.6	0 46 10.6	.3
12	22 36 56.29	9 37 10.6	.2810044	13 11.8	336 20 1.4	0 46 10.6	.3
13	22 36 47.83	9 38 1.6	.2808964	13 7.7	336 20 40.2	0 46 10.7	.3
14	22 36 39.32	9 38 52.9	.2807947	13 3.6	336 21 18.9	0 46 10.7	.3
15	22 36 30.74	9 39 44.5	.2806996	12 59.6	336 21 57.6	0 46 10.8	.3
16	22 36 22.11	9 40 36.4	.2806110	12 55.5	336 22 36.2	0 46 10.9	.3
17	22 36 13.43	9 41 28.5	.2805290	12 51.4	336 23 14.8	0 46 10.9	.3
18	22 36 4.70	9 42 20.8	.2804534	12 47.3	336 23 53.3	0 46 11.0	.3
19	22 35 55.93	9 43 13.3	.2803844	12 43.3	336 24 31.9	0 46 11.1	.3
20	22 35 47.11	9 44 6.0	.2803220	12 39.2	336 25 10.4	0 46 11.1	.3
21	22 35 38.26	9 44 58.9	.2802662	12 35.1	336 25 49.0	0 46 11.2	.3
22	22 35 29.37	9 45 51.9	.2802172	12 31.0	336 26 27.7	0 46 11.2	.3
23	22 35 20.45	9 46 45.1	.2801747	12 27.0	336 27 6.3	0 46 11.3	.3
24	22 35 11.50	9 47 38.4	.2801391	12 22.9	336 27 45.0	0 46 11.4	.3
25	22 35 2.52	9 48 31.7	.2801102	12 18.8	336 28 23.8	0 46 11.4	.3
26	22 34 53.52	9 49 25.1	.2800880	12 14.7	336 29 2.5	0 46 11.5	.3
27	22 34 44.50	9 50 18.5	.2800727	12 10.6	336 29 41.2	0 46 11.6	.3
28	22 34 35.47	9 51 12.0	.2800642	12 6.5	336 30 19.8	0 46 11.6	.3
29	22 34 26.43	9 52 5.4	.2800625	12 2.5	336 30 58.5	0 46 11.7	.3
30	22 34 17.39	9 52 58.8	.2800675	11 58.4	336 31 37.1	0 46 11.7	.3
31	22 34 8.34	9 53 52.1	.2800795	11 54.3	336 32 15.7	0 46 11.8	.3
32	22 33 59.29	S. 9 54 45.4	1.2800985	11 50.2	336 32 54.2	S. 0 46 11.8	1.3

SEPTEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
1	22 33 59.29	S. 9 54 45.4	1.2800985	11 50.2	336 32 54.2	S. 0 46 11.8	1.3024728
2	22 33 50.26	9 55 38.5	.2801242	11 46.1	336 33 32.7	0 46 11.9	.3024736
3	22 33 41.23	9 56 31.5	.2801569	11 42.1	336 34 11.3	0 46 12.0	.3024744
4	22 33 32.22	9 57 24.4	.2801965	11 38.0	336 34 49.8	0 46 12.0	.3024752
5	22 33 23.23	9 58 17.1	.2802427	11 33.9	336 35 28.4	0 46 12.1	.3024760
6	22 33 14.27	9 59 9.5	.2802957	11 29.8	336 36 7.1	0 46 12.1	.3024768
7	22 33 5.33	10 0 1.8	.2803555	11 25.7	336 36 45.7	0 46 12.2	.3024775
8	22 32 56.42	10 0 53.8	.2804220	11 21.6	336 37 24.4	0 46 12.2	.3024783
9	22 32 47.55	10 1 45.5	.2804953	11 17.6	336 38 3.1	0 46 12.3	.3024791
10	22 32 38.71	10 2 36.9	.2805754	11 13.5	336 38 41.8	0 46 12.4	.3024799
11	22 32 29.91	10 3 28.0	.2806621	11 9.4	336 39 20.5	0 46 12.4	.3024807
12	22 32 21.16	10 4 18.8	.2807553	11 5.3	336 39 59.1	0 46 12.5	.3024815
13	22 32 12.46	10 5 9.3	.2808552	11 1.2	336 40 37.7	0 46 12.5	.3024823
14	22 32 3.81	10 5 59.3	.2809617	10 57.2	336 41 16.2	0 46 12.6	.3024831
15	22 31 55.21	10 6 49.0	.2810747	10 53.1	336 41 54.7	0 46 12.6	.3024839
16	22 31 46.67	10 7 38.3	.2811942	10 49.0	336 42 33.2	0 46 12.7	.3024847
17	22 31 38.19	10 8 27.2	.2813201	10 45.0	336 43 11.8	0 46 12.8	.3024855
18	22 31 29.78	10 9 15.6	.2814524	10 40.9	336 43 50.4	0 46 12.8	.3024863
19	22 31 21.44	10 10 3.5	.2815911	10 36.8	336 44 29.0	0 46 12.9	.3024871
20	22 31 13.17	10 10 50.9	.2817362	10 32.8	336 45 7.7	0 46 12.9	.3024879
21	22 31 4.98	10 11 37.9	.2818875	10 28.7	336 45 46.4	0 46 13.0	.3024887
22	22 30 56.87	10 12 24.3	.2820451	10 24.6	336 46 25.1	0 46 13.0	.3024894
23	22 30 48.84	10 13 10.2	.2822090	10 20.6	336 47 3.8	0 46 13.1	.3024902
24	22 30 40.90	10 13 55.5	.2823790	10 16.5	336 47 42.4	0 46 13.2	.3024910
25	22 30 33.05	10 14 40.2	.2825551	10	31.0	0 46 13.2	.3024918
26	22 30 25.29	10 15 24.3	.2827373		59.6	0 46 13.3	.3024926
27	22 30 17.63	10 16 7.8	.2829256		18.2	0 46 13.3	.3024934
28	22 30 10.07	10 16 50.5	.283		16.7	0 46 13.4	.3024942
29	22 30 2.61	10			5.2	0 46 13.4	.3024950
30	22 29 55.26	10			3.7	0 46 13.5	.3024958
31	22 29 48.01	S. 10			12		1.3024965

OCTOBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
	<small>h m s</small>	<small>° ' "</small>		<small>h m</small>	<small>° ' "</small>	<small>° ' "</small>	
1	22 29 48.01	S. 10 18 55.3	1.2837373	9 48.1	336 52 12.3	S. 0 46 13.6	1.3024963
2	22 29 40.88	10 19 35.5	.2839546	9 44.1	336 52 50.9	0 46 13.6	.3024973
3	22 29 33.87	10 20 14.8	.2841774	9 40.0	336 53 29.5	0 46 13.7	.3024981
4	22 29 26.99	10 20 53.4	.2844057	9 36.0	336 54 8.1	0 46 13.7	.3024989
5	22 29 20.23	10 21 31.2	.2846393	9 31.9	336 54 46.8	0 46 13.8	.3024996
6	22 29 13.60	10 22 8.1	.2848783	9 27.9	336 55 25.5	0 46 13.8	.3025004
7	22 29 7.09	10 22 44.3	.2851224	9 23.9	336 56 4.2	0 46 13.9	.3025012
8	22 29 0.72	10 23 19.6	.2853717	9 19.8	336 56 42.9	0 46 13.9	.3025020
9	22 28 54.48	10 23 54.1	.2856261	9 15.8	336 57 21.5	0 46 14.0	.3025027
10	22 28 48.38	10 24 27.8	.2858853	9 11.7	336 58 0.1	0 46 14.1	.3025035
11	22 28 42.42	10 25 0.7	.2861495	9 7.7	336 58 38.7	0 46 14.1	.3025043
12	22 28 36.59	10 25 32.8	.2864184	9 3.7	336 59 17.2	0 46 14.2	.3025051
13	22 28 30.91	10 26 4.1	.2866920	8 59.7	336 59 55.7	0 46 14.2	.3025059
14	22 28 25.38	10 26 34.4	.2869702	8 55.6	337 0 34.2	0 46 14.3	.3025066
15	22 28 20.00	10 27 3.8	.2872530	8 51.6	337 1 12.8	0 46 14.3	.3025074
16	22 28 14.77	10 27 32.3	.2875400	8 47.6	337 1 51.5	0 46 14.4	.3025082
17	22 28 9.70	10 27 59.8	.2878314	8 43.6	337 2 30.2	0 46 14.5	.3025090
18	22 28 4.78	10 28 26.4	.2881270	8 39.6	337 3 8.9	0 46 14.5	.3025097
19	22 28 0.03	10 28 52.0	.2884267	8 35.6	337 3 47.6	0 46 14.6	.3025105
20	22 27 55.43	10 29 16.6	.2887305	8 31.5	337 4 26.3	0 46 14.6	.3025113
21	22 27 50.99	10 29 40.2	.2890381	8 27.5	337 5 5.0	0 46 14.7	.3025121
22	22 27 46.72	10 30 2.9	.2893497	8 23.5	337 5 43.6	0 46 14.7	.3025128
23	22 27 42.61	10 30 24.7	.2896651	8 19.5	337 6 22.2	0 46 14.8	.3025136
24	22 27 38.67	10 30 45.4	.2899841	8 15.5	337 7 0.8	0 46 14.8	.3025144
25	22 27 34.89	10 31 5.1	.2903067	8 11.6	337 7 39.4	0 46 14.9	.3025152
26	22 27 31.29	10 31 23.8	.2906327	8 7.6	337 8 17.9	0 46 14.9	.3025160
27	22 27 27.87	10 31 41.4	.2909620	8 3.6	337 8 56.5	0 46 15.0	.3025167
28	22 27 24.62	10 31 57.9	.2912946	7 59.6	337 9 35.1	0 46 15.1	.3025175
29	22 27 21.56	10 32 13.3	.2916302	7 55.6	337 10 13.7	0 46 15.1	.3025183
30	22 27 18.67	10 32 27.7	.2919687	7 51.6	337 10 52.3	0 46 15.2	.3025190
31	22 27 15.97	10 32 41.0	.2923101	7 47.7	337 11 31.0	0 46 15.2	.3025198
32	22 27 13.45	S. 10 32 53.2	1.2926542	7 43.7	337 12 9.7	S. 0 46 15.3	1.3025206

NOVEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.	Passage.	Noon.	Noon.	Noon.
1	h m s 22 27 13.45	S. 10 32 53.2	1.2926542	h m 7 43.7	° ' " 337 12 9.7	S. 0 46 15.3	1.3025206
2	22 27 11.11	10 33 4.4	.2930009	7 39.7	337 12 48.4	0 46 15.3	.3025213
3	22 27 8.96	10 33 14.4	.2933501	7 35.8	337 13 27.1	0 46 15.4	.3025221
4	22 27 6.99	10 33 23.4	.2937017	7 31.8	337 14 5.9	0 46 15.4	.3025228
5	22 27 5.21	10 33 31.4	.2940555	7 27.8	337 14 44.6	0 46 15.5	.3025236
6	22 27 3.62	10 33 38.3	.2944115	7 23.9	337 15 23.2	0 46 15.5	.3025244
7	22 27 2.21	10 33 44.0	.2947696	7 19.9	337 16 1.8	0 46 15.6	.3025251
8	22 27 0.99	10 33 48.7	.2951295	7 16.0	337 16 40.3	0 46 15.7	.3025259
9	22 26 59.97	10 33 52.2	.2954912	7 12.0	337 17 18.9	0 46 15.7	.3025267
10	22 26 59.13	10 33 54.6	.2958545	7 8.1	337 17 57.5	0 46 15.8	.3025274
11	22 26 58.49	10 33 55.8	.2962194	7 4.1	337 18 36.1	0 46 15.8	.3025282
12	22 26 58.04	10 33 55.9	.2965858	7 0.2	337 19 14.7	0 46 15.9	.3025290
13	22 26 57.78	10 33 54.9	.2969534	6 56.3	337 19 53.4	0 46 15.9	.3025297
14	22 26 57.72	10 33 52.8	.2973222	6 52.3	337 20 32.1	0 46 16.0	.3025305
15	22 26 57.84	10 33 49.5	.2976922	6 48.4	337 21 10.9	0 46 16.0	.3025313
16	22 26 58.16	10 33 45.1	.2980631	6 44.5	337 21 49.6	0 46 16.1	.3025320
17	22 26 58.68	10 33 39.6	.2984350	6 40.5	337 22 28.4	0 46 16.1	.3025328
18	22 26 59.38	10 33 32.9	.2988076	6 36.6	337 23 7.1	0 46 16.2	.3025335
19	22 27 0.28	10 33 25.2	.2991809	6 32.7	337 23 45.7	0 46 16.2	.3025343
20	22 27 1.38	10 33 16.3	.2995547	6 28.8	337 24 24.4	0 46 16.3	.3025351
21	22 27 2.67	10 33 6.3	.2999291	6 24.9	337 25 3.0	0 46 16.3	.3025358
22	22 27 4.15	10 32 55.2	.3003040	6 21.0	337 25 41.6	0 46 16.4	.3025366
23	22 27 5.83	10 32 42.9	.3006791	6 17.1	337 26 20.2	0 46 16.5	.3025373
24	22 27 7.69	10 32 29.6	.3010544	6 13.2	337 26 58.8	0 46 16.5	.3025381
25	22 27 9.75	10 32 15.1	.3014297	6 9.3	337 27 37.4	0 46 16.6	.3025389
26	22 27 12.01	10 31 59.5	.3018050	6 5.4	337 28 16.0	0 46 16.6	.3025396
27	22 27 14.46	10 31 42.8	.3021800	6 1.5	337 28 54.7	0 46 16.7	.3025404
28	22 27 17.12	10 31 24.9	.3025		337 29 33.4	0 46 16.7	.3025412
29	22 27 19.97	10 31 5.8	.3029		337 30 12.0	0 46 16.8	.3025419
30	22 27 23.01	10 30 45.7	.303301		30 51	0 46 16.8	.3025427
31	22 27 26.24	S. 10 30 24.4	1.3036				

DECEMBER, 1837.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vec.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	22 27 26.24	S. 10 30 24.4	1.3036738	5 46.0	337 31 29.7	S. 0 46 16.9	1.302541
2	22 27 29.67	10 30 2.0	.3040454	5 42.1	337 32 8.4	0 46 16.9	.302541
3	22 27 33.28	10 29 38.6	.3044159	5 38.2	337 32 47.1	0 46 17.0	.302541
4	22 27 37.08	10 29 14.1	.3047855	5 34.4	337 33 25.8	0 46 17.0	.302541
5	22 27 41.06	10 28 48.5	.3051540	5 30.5	337 34 4.4	0 46 17.1	.302541
6	22 27 45.23	10 28 21.8	.3055212	5 26.6	337 34 42.9	0 46 17.1	.302541
7	22 27 49.59	10 27 54.0	.3058870	5 22.8	337 35 21.5	0 46 17.2	.302541
8	22 27 54.13	10 27 25.2	.3062514	5 18.9	337 36 0.1	0 46 17.2	.302541
9	22 27 58.86	10 26 55.3	.3066143	5 15.1	337 36 38.8	0 46 17.3	.302541
10	22 28 3.78	10 26 24.3	.3069754	5 11.2	337 37 17.5	0 46 17.3	.302551
11	22 28 8.88	10 25 52.2	.3073348	5 7.4	337 37 56.3	0 46 17.4	.302551
12	22 28 14.16	10 25 19.1	.3076923	5 3.5	337 38 35.0	0 46 17.4	.302551
13	22 28 19.62	10 24 45.0	.3080478	4 59.7	337 39 13.8	0 46 17.5	.302551
14	22 28 25.26	10 24 9.9	.3084012	4 55.8	337 39 52.6	0 46 17.5	.302551
15	22 28 31.07	10 23 33.7	.3087525	4 52.0	337 40 31.3	0 46 17.5	.302551
16	22 28 37.05	10 22 56.6	.3091016	4 48.2	337 41 10.0	0 46 17.6	.302551
17	22 28 43.21	10 22 18.5	.3094484	4 44.3	337 41 48.7	0 46 17.6	.302551
18	22 28 49.53	10 21 39.4	.3097927	4 40.5	337 42 27.3	0 46 17.7	.302551
19	22 28 56.03	10 20 59.3	.3101346	4 36.7	337 43 5.9	0 46 17.7	.302551
20	22 29 2.69	10 20 18.2	.3104738	4 32.9	337 43 44.5	0 46 17.8	.302551
21	22 29 9.53	10 19 36.2	.3108103	4 29.1	337 44 23.1	0 46 17.8	.302551
22	22 29 16.54	10 18 53.1	.3111440	4 25.2	337 45 1.7	0 46 17.9	.302551
23	22 29 23.72	10 18 9.1	.3114749	4 21.4	337 45 40.4	0 46 17.9	.302551
24	22 29 31.06	10 17 24.2	.3118027	4 17.6	337 46 19.1	0 46 18.0	.302561
25	22 29 38.56	10 16 38.3	.3121275	4 13.8	337 46 57.8	0 46 18.0	.302561
26	22 29 46.22	10 15 51.5	.3124491	4 10.0	337 47 36.6	0 46 18.1	.302561
27	22 29 54.05	10 15 3.7	.3127674	4 6.2	337 48 15.4	0 46 18.1	.302561
28	22 30 2.03	10 14 15.1	.3130823	4 2.4	337 48 54.1	0 46 18.2	.302561
29	22 30 10.16	10 13 25.5	.3133938	3 58.6	337 49 32.9	0 46 18.2	.302561
30	22 30 18.44	10 12 35.1	.3137017	3 54.8	337 50 11.6	0 46 18.3	.302561
31	22 30 26.87	10 11 43.8	.3140061	3 51.1	337 50 50.2	0 46 18.3	.302561
32	22 30 35.44	S. 10 10 51.7	1.3143067	3 47.3	337 51 28.8	S. 0 46 18.3	1.302566

PARALLAXES AND SEMIDIAMETERS.

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1837.		MERCURY.		VENUS.		1837.		MERCURY.		VENUS.	
Mean Noon.		Equat. Hor.Par.	Equat. Semid.	Equat. Hor.Par.	Equat. Semid.	Mean Noon.		Equat. Hor.Par.	Equat. Semid.	Equat. Hor.Par.	Equat. Semid.
Jan. 1	6° 38'	2° 40'	6° 60'	6° 34'	July 5	9° 10'	3° 43'	5° 14'	4° 94'		
6	6° 73'	2° 53'	6° 46'	6° 21'	10	8° 11'	3° 05'	5° 18'	4° 98'		
11	7° 25'	2° 73'	6° 33'	6° 09'	15	7° 34'	2° 76'	5° 23'	5° 03'		
16	8° 04'	3° 03'	6° 21'	5° 97'	20	6° 81'	2° 56'	5° 28'	5° 08'		
21	9° 19'	3° 46'	6° 10'	5° 86'	25	6° 50'	2° 45'	5° 34'	5° 14'		
26	10° 73'	4° 04'	5° 99'	5° 76'	30	6° 37'	2° 40'	5° 41'	5° 20'		
31	12° 31'	4° 64'	5° 89'	5° 67'	Aug. 4	6° 38'	2° 40'	5° 48'	5° 27'		
Feb. 5	13° 19'	4° 97'	5° 80'	5° 58'	9	6° 49'	2° 44'	5° 56'	5° 35'		
10	12° 93'	4° 87'	5° 72'	5° 50'	14	6° 67'	2° 51'	5° 64'	5° 43'		
15	11° 96'	4° 50'	5° 64'	5° 42'	19	6° 92'	2° 60'	5° 73'	5° 51'		
20	10° 86'	4° 09'	5° 56'	5° 35'	24	7° 23'	2° 72'	5° 83'	5° 61'		
25	9° 87'	3° 72'	5° 49'	5° 28'	29	7° 62'	2° 87'	5° 93'	5° 71'		
March 2	9° 07'	3° 41'	5° 43'	5° 22'	Sept. 3	8° 11'	3° 05'	6° 04'	5° 81'		
7	8° 42'	3° 17'	5° 37'	5° 16'	8	8° 70'	3° 28'	6° 16'	5° 93'		
12	7° 89'	2° 97'	5° 31'	5° 11'	13	9° 44'	3° 56'	6° 29'	6° 05'		
17	7° 46'	2° 81'	5° 26'	5° 06'	18	10° 35'	3° 90'	6° 43'	6° 18'		
22	7° 11'	2° 68'	5° 21'	5° 01'	23	11° 42'	4° 30'	6° 58'	6° 32'		
27	6° 83'	2° 57'	5° 17'	4° 97'	28	12° 48'	4° 70'	6° 73'	6° 48'		
April 1	6° 61'	2° 49'	5° 13'	4° 93'	Oct. 3	13° 04'	4° 91'	6° 90'	6° 64'		
6	6° 47'	2° 44'	5° 10'	4° 90'	8	12° 56'	4° 73'	7° 08'	6° 81'		
11	6° 41'	2° 41'	5° 06'	4° 87'	13	11° 14'	4° 20'	7° 27'	7° 00'		
16	6° 47'	2° 44'	5° 04'	4° 84'	18	9° 54'	3° 59'	7° 48'	7° 20'		
21	6° 70'	2° 52'	5° 01'	4° 82'	23	8° 31'	3° 12'	7° 71'	7° 41'		
26	7° 14'	2° 69'	4° 99'	4° 80'	28	7° 39'	2° 78'	7° 95'	7° 64'		
May 1	7° 81'	2° 94'	4° 97'	4° 78'	Nov. 2	6° 81'	2° 56'	8° 21'	7° 89'		
6	8° 72'	3° 28'	4° 96'	4° 77'	7	6° 42'	2° 42'	8° 49'	8° 16'		
11	9° 84'	3° 70'	4° 95'	4° 76'	12	6° 17'	2° 32'	8° 79'	8° 46'		
16	11° 14'	4° 20'	4° 94'	4° 75'	17	6° 02'	2° 27'	9° 13'	8° 78'		
21	12° 56'	4° 73'	4° 93'	4° 76'	22	5° 93'	2° 23'	9° 49'	9° 12'		
26	13° 97'	5° 26'	4° 95'		27	5° 91'	2° 23'	9° 88'	9° 51'		
31	15° 06'	5° 67'	4° 96'		Dec. 2	5° 95'	2° 24'	10° 31'	9° 92'		
June 5	15° 58'	5° 87'	4° 97'		7	6° 05'	2° 28'	10° 79'	10° 38'		
10	15° 34'	5° 78'	4° 99'		12	6° 22'	2° 34'	11° 32'	10° 88'		
15	14° 41'	5° 43'	5° 01'		17	6° 48'	2° 44'	11° 90'	11° 45'		
20	15°				22	6° 86'	2° 58'	12° 54'	12° 07'		
25	16°				27	7° 43'	2° 80'	13° 26'	12° 76'		
30	16°					8° 25'	3° 11'	14° 07'	13° 53'		
July 5											

1837.		MARS.		JUPITER.		1837.		MARS.		JUPITER.	
Mean Noon.		Equat. Hor.Par.	Equat. Semid.	Equat. Hor.Par.	Equat. Semid.	Mean Noon.		Equat. Hor.Par.	Equat. Semid.	Equat. Hor.Par.	Equat. Semid.
Jan.	1	10° 76'	5° 56'	1° 91'	22° 21'	July	5	4° 94'	2° 55'	1° 39'	16° 18'
	6	11° 19'	5° 78'	1° 93'	22° 43'		10	4° 85'	2° 51'	1° 38'	16° 16'
	11	11° 60'	5° 99'	1° 95'	22° 61'		15	4° 76'	2° 46'	1° 37'	16° 15'
	16	11° 96'	6° 19'	1° 96'	22° 76'		20	4° 67'	2° 42'	1° 36'	16° 13'
	21	12° 28'	6° 35'	1° 97'	22° 87'		25	4° 60'	2° 38'	1° 36'	16° 13'
	26	12° 52'	6° 48'	1° 97'	22° 94'		30	4° 52'	2° 34'	1° 35'	16° 13'
Feb.	31	12° 68'	6° 55'	1° 98'	22° 97'	Aug.	4	4° 45'	2° 30'	1° 35'	16° 13'
	5	12° 73'	6° 58'	1° 98'	22° 96'		9	4° 39'	2° 27'	1° 34'	16° 13'
	10	12° 67'	6° 55'	1° 97'	22° 90'		14	4° 33'	2° 24'	1° 34'	16° 13'
	15	12° 51'	6° 47'	1° 96'	22° 81'		19	4° 28'	2° 21'	1° 34'	16° 13'
	20	12° 26'	6° 34'	1° 95'	22° 68'		24	4° 23'	2° 18'	1° 34'	16° 13'
	25	11° 93'	6° 17'	1° 94'	22° 51'		29	4° 18'	2° 16'	1° 34'	16° 13'
March	2	11° 55'	5° 97'	1° 92'	22° 31'	Sept.	3	4° 13'	2° 14'	1° 34'	16° 13'
	7	11° 14'	5° 76'	1° 90'	22° 08'		8	4° 09'	2° 11'	1° 35'	16° 13'
	12	10° 70'	5° 53'	1° 88'	21° 83'		13	4° 05'	2° 09'	1° 35'	16° 13'
	17	10° 27'	5° 31'	1° 86'	21° 56'		18	4° 02'	2° 08'	1° 36'	16° 13'
	22	9° 83'	5° 08'	1° 83'	21° 28'		23	3° 98'	2° 06'	1° 36'	16° 13'
	27	9° 42'	4° 87'	1° 80'	20° 98'		28	3° 95'	2° 04'	1° 37'	16° 13'
April	1	9° 02'	4° 66'	1° 78'	20° 68'	Oct.	3	3° 92'	2° 03'	1° 38'	16° 13'
	6	8° 64'	4° 47'	1° 75'	20° 37'		8	3° 90'	2° 01'	1° 39'	16° 13'
	11	8° 28'	4° 28'	1° 73'	20° 06'		13	3° 87'	2° 00'	1° 40'	16° 13'
	16	7° 95'	4° 11'	1° 70'	19° 75'		18	3° 85'	1° 99'	1° 41'	16° 13'
	21	7° 64'	3° 95'	1° 67'	19° 45'		23	3° 83'	1° 98'	1° 43'	16° 13'
	26	7° 35'	3° 80'	1° 65'	19° 15'		28	3° 81'	1° 97'	1° 44'	16° 13'
May	1	7° 08'	3° 66'	1° 62'	18° 86'	Nov.	2	3° 79'	1° 96'	1° 46'	16° 13'
	6	6° 84'	3° 53'	1° 60'	18° 58'		7	3° 77'	1° 95'	1° 48'	16° 13'
	11	6° 61'	3° 42'	1° 58'	18° 31'		12	3° 76'	1° 94'	1° 49'	16° 13'
	16	6° 39'	3° 31'	1° 55'	18° 05'		17	3° 74'	1° 93'	1° 51'	16° 13'
	21	6° 19'	3° 20'	1° 53'	17° 81'		22	3° 73'	1° 93'	1° 53'	16° 13'
	26	6° 01'	3° 11'	1° 51'	17° 57'		27	3° 72'	1° 92'	1° 56'	16° 13'
June	31	5° 84'	3° 02'	1° 49'	17° 35'	Dec.	2	3° 71'	1° 92'	1° 58'	16° 13'
	5	5° 68'	2° 94'	1° 47'	17° 15'		7	3° 70'	1° 91'	1° 60'	16° 13'
	10	5° 54'	2° 86'	1° 46'	16° 95'		12	3° 69'	1° 91'	1° 63'	16° 13'
	15	5° 40'	2° 79'	1° 44'	16° 77'		17	3° 68'	1° 90'	1° 65'	16° 13'
	20	5° 27'	2° 73'	1° 43'	16° 60'		22	3° 67'	1° 90'	1° 68'	16° 13'
	25	5° 15'	2° 66'	1° 42'	16° 45'		27	3° 66'	1° 89'	1° 70'	16° 13'
	30	5° 04'	2° 61'	1° 40'	16° 30'		32	3° 66'	1° 90'	1° 73'	16° 13'
July	5	4° 94'	2° 55'	1° 39'	16° 18'						

Polar Semid. =
Equat. Semid.

1837.		SATURN.		GEORGIAN.		1837.		SATURN.		GEORGIAN.	
Mean Noon.		Equat. Hor.Par.	Equat. Semid.	Equat. Hor.Par.	Equat. Semid.	Mean Noon.		Equat. Hor.Par.	Equat. Semid.	Equat. Hor.Par.	Equat. Semid.
		"	"	"	"			"	"	"	"
Jan.	1	0.83	7.82	0.42	1.80	July	5	0.91	8.64	0.44	1.91
	6	0.83	7.88	0.41	1.80		10	0.91	8.57	0.44	1.92
	11	0.84	7.93	0.41	1.79		15	0.90	8.50	0.44	1.93
	16	0.85	7.99	0.41	1.79		20	0.89	8.43	0.44	1.93
	21	0.85	8.06	0.41	1.78		25	0.88	8.36	0.45	1.94
	26	0.86	8.12	0.41	1.78		30	0.88	8.29	0.45	1.94
	31	0.87	8.19	0.41	1.78	Aug.	4	0.87	8.22	0.45	1.95
Feb.	5	0.87	8.26	0.41	1.77		9	0.86	8.15	0.45	1.95
	10	0.88	8.33	0.41	1.77		14	0.85	8.08	0.45	1.95
	15	0.89	8.40	0.41	1.77		19	0.85	8.02	0.45	1.95
	20	0.90	8.47	0.41	1.77		24	0.84	7.95	0.45	1.95
	25	0.90	8.54	0.41	1.77		29	0.83	7.89	0.45	1.95
March	2	0.91	8.61	0.41	1.77	Sept.	3	0.83	7.84	0.45	1.95
	7	0.92	8.68	0.41	1.77		8	0.82	7.78	0.45	1.95
	12	0.93	8.75	0.41	1.77		13	0.82	7.73	0.45	1.95
	17	0.93	8.81	0.41	1.77		18	0.81	7.69	0.45	1.95
	22	0.94	8.87	0.41	1.78		23	0.81	7.64	0.45	1.95
	27	0.94	8.93	0.41	1.78		28	0.80	7.60	0.45	1.94
April	1	0.95	8.98	0.41	1.78	Oct.	3	0.80	7.57	0.45	1.94
	6	0.95	9.02	0.41	1.79		8	0.80	7.54	0.44	1.93
	11	0.96	9.06	0.41	1.79		13	0.79	7.51	0.44	1.93
	16	0.96	9.09	0.41	1.80		18	0.79	7.48	0.44	1.92
	21	0.96	9.11	0.42	1.80		23	0.79	7.46	0.44	1.91
	26	0.97	9.13	0.42	1.81		28	0.79	7.45	0.44	1.91
May	1	0.97	9.14	0.42	1.82	Nov.	2	0.79	7.44	0.44	1.90
	6	0.97	9.14	0.42	1.82		7	0.79	7.43	0.44	1.89
	11	0.97	9.13	0.42	1.83		12	0.79	7.43	0.43	1.88
	16	0.96	9.11	0.42	1.84		17	0.79	7.43	0.43	1.87
	21	0.96	9.09	0.43	1.85		22	0.79	7.44	0.43	1.87
	26	0.96	9.06	0.43	1.85		27	0.79	7.45	0.43	1.86
	31	0.95	9.03	0.43	1.86	Dec.	2	0.79	7.47	0.43	1.85
June	5	0.95	8.99	0.43	1.87		7	0.79	7.49	0.42	1.84
	10	0.95	8.94	0.43	1.87		12	0.79	7.51	0.42	1.83
	15	0.94	8.89	0.43	1.87		17	0.80	7.54	0.42	1.83
	20	0.93	8.83	0.43	1.87		22	0.80	7.57	0.42	1.82
	25	0.93	8.77	0.43	1.87		27	0.80	7.61	0.42	1.81
	30	0.92	8.70	0.43	1.87			0.81	7.65	0.42	1.81
July	5	0.91									

Polar Semid.
Equat. Semid. = 0.927

MEAN PLACES OF 100 PRINCIPAL FIXED STARS,
FOR JANUARY 1, 1837.

Star's Name.	Mag.	Right Ascension.	Annual Var.	Declination.	Annual
		^h ^m ^s	^s	[°] ['] ["]	["]
γ PEGASI (<i>Algenib</i>)	2.3	0 4 51.080	+ 3.0775	N.14 16 38.67	+20.0
β Hydri - - - - -	3	0 17 4.376	3.3141*	S.78 10 24.39	20.0
α CASSIOPEÆ - - -	3	0 31 17.953	3.3369	N.55 38 32.40	19.8
β Ceti - - - - -	2.3	0 35 24.341	3.0000	S.18 52 54.16	19.8
α URS. MIN. (<i>Polaris</i>)	2.3	1 1 21.793	+16.1962*	N.88 26 23.94	+19.3
θ Ceti - - - - -	3	1 15 52.809	3.0013	S. 9 1 32.80	18.9
α Eridani (<i>Achernar</i>)	1	1 31 38.180	2.2351	S.58 4 0.55	18.4
α ARIETIS - - - - -	3	1 57 59.904	3.3457	N.22 41 19.45	17.4
γ Ceti - - - - -	3	2 34 51.861	+ 3.1076	N. 2 32 43.91	+15.6
α CETI - - - - -	2.3	2 53 45.967	3.1257	N. 3 26 46.41	14.56
α PERSEI - - - - -	2.3	3 12 43.283	4.2280	N.49 16 28.63	13.37
η Tauri - - - - -	3	3 37 48.405	3.5456	N.23 35 44.33	11.65
γ Eridani - - - - -	2.3	3 50 25.644	+ 2.7894	S.13 58 35.30	+10.7
α TAURI (<i>Aldebaran</i>)	1	4 26 34.492	3.4264	N.16 10 32.97	7.9
α AURIGÆ (<i>Capella</i>)	-1	5 4 39.451	4.4066	N.45 49 28.43	4.7
β ORIONIS (<i>Rigel</i>)	1	5 6 42.457	2.8783	S. 8 23 43.15	4.6
β TAURI - - - - -	2	5 15 59.611	+ 3.7820	N.28 27 46.73	+ 3.8
δ ORIONIS - - - - -	2	5 23 40.992	3.0605	S. 0 25 32.64	3.1
α Leporis - - - - -	3.4	5 25 32.635	2.6422	S.17 56 38.28	3.0
ϵ ORIONIS - - - - -	2.3	5 27 56.740	3.0401	S. 1 18 42.52	2.7
α Columbæ - - - - -	2	5 33 45.011	+ 2.1688	S.34 9 54.28	+ 2.2
α ORIONIS - - - - -	1	5 46 20.980	3.2430	N. 7 22 13.57	+ 1.1
μ Geminorum - - - -	3	6 13 5.940	3.6257	N.22 35 25.81	- 1.1
α Argus - (<i>Canopus</i>)	1	6 20 20.194	1.3278	S.52 36 33.09	1.7
51 (Hev.) Cephei - -	6	6 21 52.541	+30.9104	N.87 15 48.42	- 1.9
α CANIS MAJ. (<i>Sirius</i>)	1	6 37 57.820	2.6458*	S.16 29 51.44	4.4
ϵ Canis Majoris - - -	2.3	6 52 13.319	2.3556	S.28 45 17.03	4.5
δ Geminorum - - - -	3.4	7 10 23.049	3.5924	N.22 16 32.98	6.0
α^* GEMINOR. (<i>Castor</i>)	3	7 24 11.494	+ 3.8572	N.32 14 20.51	- 7.2
α CAN. MIN. (<i>Procyon</i>)	1.2	7 30 46.095	3.1448*	N. 5 38 15.08	8.7
β GEMINOR. (<i>Pollux</i>)	2	7 35 20.021	3.6840*	N.28 24 49.89	8.1
15 Argus - - - - -	3.4	8 0 36.306	2.5595	S.23 50 17.84	10.0
ϵ Hydræ - - - - -	4	8 38 8.542	+ 3.1972	N. 7 0 44.92	-12.7
ϵ Ursæ Majoris - - -	3.4	8 48 0.733	4.1301*	N.48 40 34.76	13.4
ι Argus - - - - -	2	9 12 43.702	1.6102	S.58 35 35.19	14.9
α HYDRÆ - - - - -	2	9 19 34.720	2.9500	S. 7 57 18.81	15.3
θ Ursæ Majoris - - -	3	9 21 54.954	+ 4.0555*	N.52 24 55.79	-16.0
ϵ Leonis - - - - -	3	9 36 35.317	3.4275	N.24 31 17.28	16.2
α LEONIS (<i>Regulus</i>)	1	9 59 41.267	3.2220	N.12 45 41.77	17.3
η Argus - - - - -	2	10 38 45.487	+ 2.3032	S.58 49 44.94	-18.8

MEAN PLACES OF 100 PRINCIPAL FIXED STARS,
FOR JANUARY 1, 1837.

Star's Name.	Mag.	Right Ascension.	Annual Var.	Declination.	Annual Var.
		^h ^m ^s	["]	[°] ['] ["]	["]
α URSE MAJORIS - -	1.2	10 53 36.557	+ 3.8077	N.62 37 46.59	-19.221
δ LEONIS - - - -	3	11 5 25.752	3.1940	N.21 24 58.79	19.491
δ Hydre et Crateris -	3.4	11 11 11.822	3.0005	S.13 53 49.40	19.603
β LEONIS - - - -	2.3	11 40 44.504	3.0660*	N.15 29 1.11	19.985
γ URSE MAJORIS - -	2	11 45 13.362	+ 3.1914	N.54 36 4.71	-20.014
β Chamæleontis - -	5	12 8 56.901	3.3256	S.78 24 25.79	20.041
α Crucis - - - -	1	12 17 35.507	3.2651	S.62 11 39.79	19.997
β Corvi - - - -	2.3	12 25 50.305	3.1327	S.22 29 36.12	19.928
12 Canum Venaticorum	2.3	12 48 23.787	+ 2.8417	N.39 12 1.00	-19.610
α VIRGINIS (<i>Spica</i>)	1	13 16 36.908	3.1502	S.10 18 27.56	18.945
η URSE MAJORIS - -	2.3	13 41 6.447	2.3534*	N.50 7 45.71	18.135
η Bootis - - - -	3	13 46 55.565	2.8606	N.19 13 7.07	17.912
β Centauri - - - -	1	13 52 23.480	+ 4.1433	S.59 34 54.82	-17.691
α BOOTIS (<i>Arcturus</i>)	1	14 8 13.765	2.7335*	N.20 2 4.54	18.956*
α Centauri - - - -	1	14 28 35.816	4.0086*	S.60 9 20.78	15.152*
ϵ BOOTIS - - - -	3	14 37 52.130	2.6229	N.27 45 55.16	15.482
α LIBRÆ - - - -	3	14 41 52.517	+ 3.3088	S.15 21 32.48	-15.256
β URSE MINORIS - -	3	14 51 15.499	- 0.2787	N.74 49 18.32	14.712
β Libræ - - - -	2.3	15 8 14.757	+ 3.2215	S. 8 46 34.22	13.661
α CORONÆ BOREALIS	2	15 27 47.283	2.5277	N.27 16 4.79	12.361
α SERPENTIS - - -	2.3	15 36 14.618	+ 2.9386	N. 6 56 38.11	-11.770
ζ URSE MINORIS - -	4	15 50 2.196	- 2.3708	N.78 17 32.46	10.775
β Scorpii - - - -	2	15 55 58.266	+ 3.4729	S.19 21 7.83	10.330
δ OPHIUCHI - - - -	3	16 5 48.620	3.1374	S. 3 16 5.09	9.582
α SCORPII (<i>Antares</i>)	1	16 19 25.503	+ 3.6625	S.26 3 47.57	- 8.519
η Draconis - - - -	3	16 21 47.704	0.7942	N.61 53 4.54	8.333
α Trianguli Australis	2	16 31 28.805	+ 6.2502	S.68 42 57.10	7.551
ϵ URSE MINORIS - -	4	17 2 54.915	- 6.5591*	N.82 17 37.22	4.948
σ Octantis - - - -	6	17 7 7.073	+104.0014	S.89 15 35.07	- 4.512
α HERCULIS - - - -	3.4	17 7 13.101	2.7317	N.14 34 55.16	4.576
β DRACONIS - - - -	2	17 26 45.244	1.3508	52 25 29.46	2.898
α OPHIUCHI - - - -	2	17 27 22.246	2.7724	N.12 41 7.18	2.844
γ DRACONIS - - - -	2	17 52 49.497	+ 1.3897	8 30 38.96	- 0.627
μ Sagittarii - - - -	3.4	18 4 1.142	+ 3.5860	5 34 67	+ 0.354
δ URSE MINORIS - -	3	18 24 37.098	-19.2072*	35 22.41	2.161
α LYRÆ - - (<i>Vega</i>)	1	18 31 2.111	+ 2.0116	38 8.62	2.742
β LYRÆ - - - -	3	18 44 37.111	+ 3.8929	10 40.85	+ 3.834
ζ AQUILÆ - - - -	3	18 57 37.111	2.7317	13 37 38.11	5.017
δ AQUILÆ - - - -	3.4	19 17 37.111	2.7317	2 47 45.15	6.637
γ AQUILÆ - - - -	3	19 30 37.111	2.7317	10 13 17.81	+ 8.360

MEAN PLACES OF 100 PRINCIPAL FIXED STARS,
FOR JANUARY 1, 1837.

Star's Name.	Mag.	Right Ascension.	Annual Var.	Declination.	Annual
		^h ^m ^s	^s	[°] ['] ["]	["]
α AQUILÆ - (<i>Altair</i>)	1.2	19 42 49.839	+ 2.9255*	N. 8 26 34.11	+ 8.7
β AQUILÆ - - - -	3.4	19 47 18.444	2.9448	N. 6 0 18.89	8.3
α^s CAPRICORNI - - -	3	20 9 0.348	3.3323	S. 13 2 37.68	10.7
α PAVONIS - - - -	2	20 12 42.546	+ 4.8099	S. 57 14 58.52	10.9
λ URSÆ MINORIS - - -	5	20 24 7.729	- 49.5330	N. 88 49 9.29	+ 11.7
α CYGNI - - - -	1	20 35 52.670	+ 2.0416	44 42 3.54	12.6
61 ¹ CYGNI - - - -	5.6	20 59 36.232	2.6904*	37 57 7.73	17.4
ζ CYGNI - - - -	3	21 6 0.187	2.5483	N. 29 33 43.88	14.5
α CEPHEI - - - -	3	21 14 40.901	+ 1.4169	N. 61 53 47.79	+ 15.0
β AQUARII - - - -	3	21 22 58.426	3.1635	S. 6 17 2.26	15.5
β CEPHEI - - - -	3	21 26 31.782	0.8089	N. 69 50 46.06	15.7
ϵ PEGASI - - - -	2.3	21 36 10.889	2.9442	N. 9 7 53.09	16.2
α AQUARII - - - -	3	21 57 24.676	+ 3.0835	S. 1 6 29.77	+ 17.2
α GRUIS - - - -	2	21 57 55.496	3.8175	S. 47 44 48.03	17.2
ζ PEGASI - - - -	3	22 33 20.054	2.9835	N. 9 58 57.94	18.6
α PIS. AUS. (<i>Fomalhaut</i>)	1	22 48 37.736	3.3114	S. 30 29 2.19	19.0
α PEGASI (<i>Markab</i>)	2	22 56 38.818	+ 2.9771	N. 14 19 49.04	+ 19.2
ϵ PISCIIUM - - - -	4.5	23 31 34.096	3.0566	4 44 36.85	19.3
γ CEPHEI - - - -	3	23 32 43.255	2.3978	76 43 22.09	19.9
α ANDROMEDÆ - - -	1	23 59 58.507	+ 3.0704	N. 28 11 26.89	+ 20.0

Those Annual Variations which include proper motion are distinguished by an Asterisk.

FORMULÆ OF REDUCTION,

ACCORDING TO PROFESSOR BESSEL.

1.—Adopting the Notation and Coefficients employed by Mr. Baily, in his Introduction to the New Tables of the Astronomical Society of London.

$$A = -18^{\cdot}6768 \cos \odot$$

$$B = -20^{\cdot}3600 \sin \odot$$

$$C = t - 0^{\cdot}02495 \sin 2 \odot - 0^{\cdot}34362 \sin \Omega + 0^{\cdot}00413 \sin 2 \Omega - 0^{\cdot}004 \sin 2 \zeta$$

$$D = -0^{\cdot}54470 \cos 2 \odot - 9^{\cdot}25000 \cos \Omega + 0^{\cdot}09030 \cos 2 \Omega - 0^{\cdot}090 \cos 2 \zeta$$

$$a = \cos \alpha \sec \delta$$

$$b = \sin \alpha \sec \delta$$

$$c = 46^{\cdot}0206 + 20^{\cdot}0426 \sin \alpha \tan \delta$$

$$d = \cos \alpha \tan \delta$$

$$a' = \tan \omega \cos \delta - \sin \alpha \sin \delta$$

$$b' = \cos \alpha \sin \delta$$

$$c' = 20^{\cdot}0426 \cos \alpha$$

$$d' = -\sin \alpha$$

Δc = the annual proper motion in Right Ascension, *in arc*.

$\Delta c'$ = the annual proper motion in Declination.

Where t denotes the time from the beginning of the year, expressed in fractional parts of a year, \odot the Sun's and ζ the Moon's true longitude, Ω the mean longitude of the Moon's node, and ω the obliquity of the Ecliptic, each for the time t : α the mean Right Ascension, *in arc*, and δ the mean Declination for the beginning of the year. Then, for the time represented by t ,

$$\text{Apparent R.A., in arc,} = \alpha + A a + B b + C c + D d + t \Delta c.$$

$$\text{Apparent Dec.} \quad \quad \quad = \delta + A a' + B b' + C c' + D d' + t \Delta c'.$$

2.—Using the same Notation and Coefficients, and assuming

$$46^{\cdot}0206 C = f \quad \text{in } H$$

$$20^{\cdot}0426 C = g \quad \text{in } H$$

$$D =$$

$$\text{Apparent R.A., in arc,} =$$

$$\alpha +$$

$$G +$$

$$(H + \alpha) \sec \delta$$

$$\text{Apparent Dec.} \quad \quad \quad =$$

$$\delta +$$

$$G +$$

$$\sin \delta$$

CONSTANTS FOR FACILITATING THE REDUCTION OF ST.

Day of the Month.	At Greenwich Mean Midnight.					
	<i>f</i>	<i>g</i>	<i>G</i>	<i>h</i>	<i>H</i>	
Jan. 1	— 8 ^{''} ·95	+ 7 ^{''} ·84	240 13 [°]	+20 ^{''} ·30	349 27 [°]	—
6	8 ^{''} ·08	7 ^{''} ·73	242 55	20 ^{''} ·23	344 45	
11	7 ^{''} ·23	7 ^{''} ·64	245 40	20 ^{''} ·14	339 59	
16	6 ^{''} ·41	7 ^{''} ·59	248 26	20 ^{''} ·03	335 11	
21	— 5 ^{''} ·61	+ 7 ^{''} ·57	251 10	+19 ^{''} ·91	330 20	—
26	4 ^{''} ·85	7 ^{''} ·58	253 49	19 ^{''} ·77	325 26	
31	4 ^{''} ·12	7 ^{''} ·62	256 22	19 ^{''} ·62	320 27	
Feb. 5	3 ^{''} ·43	7 ^{''} ·67	258 46	19 ^{''} ·48	315 24	
10	— 2 ^{''} ·77	+ 7 ^{''} ·74	261 1	+19 ^{''} ·33	310 18	—
15	2 ^{''} ·15	7 ^{''} ·81	263 6	19 ^{''} ·19	305 7	
20	1 ^{''} ·56	7 ^{''} ·89	265 3	19 ^{''} ·06	299 52	
25	1 ^{''} ·00	7 ^{''} ·97	266 52	18 ^{''} ·94	294 35	
Mar. 2	— 0 ^{''} ·47	+ 8 ^{''} ·05	268 34	+18 ^{''} ·84	289 14	—
7	+ 0 ^{''} ·05	8 ^{''} ·12	270 10	18 ^{''} ·76	283 51	
12	0 ^{''} ·56	8 ^{''} ·18	271 42	18 ^{''} ·71	278 27	
17	1 ^{''} ·05	8 ^{''} ·22	273 11	18 ^{''} ·68	273 2	
22	+ 1 ^{''} ·54	+ 8 ^{''} ·26	274 39	+18 ^{''} ·68	267 38	—
27	2 ^{''} ·04	8 ^{''} ·29	276 8	18 ^{''} ·70	262 15	
April 1	2 ^{''} ·54	8 ^{''} ·31	277 39	18 ^{''} ·75	256 54	
6	3 ^{''} ·06	8 ^{''} ·32	279 13	18 ^{''} ·83	251 36	
11	+ 3 ^{''} ·60	+ 8 ^{''} ·32	280 51	+18 ^{''} ·92	246 22	—
16	4 ^{''} ·16	8 ^{''} ·33	282 34	19 ^{''} ·03	241 12	
21	4 ^{''} ·75	8 ^{''} ·33	284 22	19 ^{''} ·15	236 6	
26	5 ^{''} ·37	8 ^{''} ·34	286 16	19 ^{''} ·29	231 6	
May 1	+ 6 ^{''} ·02	+ 8 ^{''} ·36	288 16	+19 ^{''} ·43	226 11	—
6	6 ^{''} ·70	8 ^{''} ·39	290 21	19 ^{''} ·57	221 21	
11	7 ^{''} ·42	8 ^{''} ·44	292 30	19 ^{''} ·71	216 35	
16	8 ^{''} ·17	8 ^{''} ·51	294 42	19 ^{''} ·84	211 54	
21	+ 8 ^{''} ·94	+ 8 ^{''} ·60	296 55	+19 ^{''} ·97	207 18	—
26	9 ^{''} ·75	8 ^{''} ·72	299 8	20 ^{''} ·08	202 45	
31	10 ^{''} ·58	8 ^{''} ·87	301 19	20 ^{''} ·17	198 15	
June 5	11 ^{''} ·43	9 ^{''} ·04	303 25	20 ^{''} ·25	193 48	
10	+12 ^{''} ·29	+ 9 ^{''} ·24	305 26	+20 ^{''} ·31	189 22	—
15	13 ^{''} ·17	9 ^{''} ·46	307 20	20 ^{''} ·34	184 59	
20	14 ^{''} ·06	9 ^{''} ·70	309 6	20 ^{''} ·36	180 37	
25	14 ^{''} ·94	9 ^{''} ·97	310 44	20 ^{''} ·35	176 14	—
30	15 ^{''} ·82	10 ^{''} ·25	312 12	20 ^{''} ·32	171 51	
July 5	+16 ^{''} ·69	+10 ^{''} ·55	313 32	+20 ^{''} ·27	167 27	—

CONSTANTS FOR FACILITATING THE REDUCTION OF STARS.

Day of the Month.	At Greenwich Mean Midnight.					
	<i>f</i>	<i>g</i>	<i>G</i>	<i>h</i>	<i>H</i>	<i>i</i>
July 5	+16 ^{''} 69	+10 ^{''} 55	313 [°] 32'	+20 ^{''} 27	167 [°] 27'	+1 ^{''} 91
10	17 ^{''} 54	10 ^{''} 86	314 43	20 ^{''} 20	163 1	2 ^{''} 56
15	18 ^{''} 38	11 ^{''} 17	315 46	20 ^{''} 11	158 33	3 ^{''} 19
20	19 ^{''} 19	11 ^{''} 49	316 40	20 ^{''} 00	154 3	3 ^{''} 80
25	+19 ^{''} 98	+11 ^{''} 81	317 28	+19 ^{''} 88	149 29	+4 ^{''} 38
30	20 ^{''} 74	12 ^{''} 12	318 10	19 ^{''} 75	144 51	4 ^{''} 93
Aug. 4	21 ^{''} 47	12 ^{''} 43	318 46	19 ^{''} 62	140 9	5 ^{''} 46
9	22 ^{''} 17	12 ^{''} 73	319 18	19 ^{''} 48	135 23	5 ^{''} 95
14	+22 ^{''} 83	+13 ^{''} 02	319 46	+19 ^{''} 34	130 32	+6 ^{''} 38
19	23 ^{''} 46	13 ^{''} 30	320 12	19 ^{''} 20	125 36	6 ^{''} 77
24	24 ^{''} 06	13 ^{''} 57	320 35	19 ^{''} 07	120 35	7 ^{''} 12
29	24 ^{''} 64	13 ^{''} 82	320 57	18 ^{''} 96	115 30	7 ^{''} 42
Sept. 3	+25 ^{''} 20	+14 ^{''} 06	321 19	+18 ^{''} 86	110 21	+7 ^{''} 67
8	25 ^{''} 73	14 ^{''} 28	321 42	18 ^{''} 78	105 8	7 ^{''} 87
13	26 ^{''} 24	14 ^{''} 49	322 5	18 ^{''} 72	99 52	8 ^{''} 01
18	26 ^{''} 75	14 ^{''} 69	322 30	18 ^{''} 69	94 33	8 ^{''} 09
23	+27 ^{''} 25	+14 ^{''} 87	322 56	+18 ^{''} 68	89 13	+8 ^{''} 11
28	27 ^{''} 75	15 ^{''} 05	323 25	18 ^{''} 69	83 52	8 ^{''} 07
Oct. 3	28 ^{''} 25	15 ^{''} 22	323 56	18 ^{''} 73	78 31	7 ^{''} 97
8	28 ^{''} 77	15 ^{''} 39	324 31	18 ^{''} 80	73 11	7 ^{''} 81
13	+29 ^{''} 31	+15 ^{''} 56	325 8	+18 ^{''} 89	67 53	+7 ^{''} 59
18	29 ^{''} 87	15 ^{''} 73	325 47	19 ^{''} 00	62 37	7 ^{''} 32
23	30 ^{''} 45	15 ^{''} 91	326 29	19 ^{''} 12	57 25	6 ^{''} 99
28	31 ^{''} 07	16 ^{''} 09	327 14	19 ^{''} 26	52 15	6 ^{''} 61
Nov. 2	+31 ^{''} 72	+16 ^{''} 29	328 0	+19 ^{''} 40	47 9	+6 ^{''} 17
7	32 ^{''} 40	16 ^{''} 50	328 47	19 ^{''} 55	42 7	5 ^{''} 69
12	33 ^{''} 12	16 ^{''} 73	329 34	19 ^{''} 69	37 9	5 ^{''} 16
17	33 ^{''} 87	16 ^{''} 97	330 21	19 ^{''} 84	32 14	4 ^{''} 59
22	+34 ^{''} 65	+17 ^{''} 23	331 7	+19 ^{''} 97	27 23	+3 ^{''} 99
27	35 ^{''} 47	17 ^{''} 52	331 52	20 ^{''} 08	22 35	3 ^{''} 35
Dec. 2	36 ^{''} 31	17 ^{''} 82		20 ^{''} 18	17 50	2 ^{''} 68
7	37 ^{''} 18	18 ^{''} 14		20 ^{''} 26	13 7	1 ^{''} 99
12	+38 ^{''} 06	+18 ^{''} 47		+20 ^{''} 32	8 25	+1 ^{''} 29
17	38 ^{''} 96	18 ^{''} 82		20 ^{''} 35	3 44	+0 ^{''} 58
22	39 ^{''} 86	19 ^{''} 11		20 ^{''} 36	359 3	-0 ^{''} 15
27	40 ^{''} 76			20 ^{''} 34	354 22	0 ^{''} 86
32	+41			20 ^{''} 30	349 41	-1 ^{''} 58

APPARENT PLACES OF α AND δ URSE MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.

JANUARY.					FEBRUARY.				
Day of the Month.	α URSE MINOR. (Polaris)		δ URSE MINOR.		Day of the Month.	α URSE MINOR. (Polaris)		δ URSE MINOR.	
	R. A.	Dec. N.	R. A.	Dec. N.		R. A.	Dec. N.	R. A.	Dec. N.
	^h ^m 1 0	[°] ['] 88 26	^h ^m 18 24	[°] ['] 86 35		^h ^m 1 0	[°] ['] 88 26	^h ^m 18 24	[°] ['] 86 35
1	67 ^s 02	42 ^s 17	34 ^s 29	13 ^s 41	1	42 ^s 67	41 ^s 85	36 ^s 81	13 ^s 41
2	66 21	42 24	34 27	13 08	2	41 94	41 73	37 00	13 08
3	65 40	42 31	34 25	12 74	3	41 21	41 61	37 19	12 74
4	64 60	42 37	34 24	12 40	4	40 49	41 49	37 39	12 40
5	63 81	42 44	34 25	12 06	5	39 78	41 36	37 60	12 06
6	63 02	42 50	34 25	11 72	6	39 07	41 23	37 81	11 72
7	62 22	42 56	34 26	11 38	7	38 37	41 09	38 03	11 38
8	61 42	42 61	34 28	11 04	8	37 68	40 94	38 25	11 04
9	60 62	42 65	34 31	10 70	9	36 99	40 78	38 48	10 70
10	59 83	42 68	34 35	10 36	10	36 32	40 62	38 72	10 36
11	59 04	42 71	34 39	10 02	11	35 65	40 46	38 96	10 02
12	58 25	42 73	34 43	9 68	12	34 99	40 29	39 20	9 68
13	57 45	42 75	34 48	9 34	13	34 34	40 12	39 44	9 34
14	56 65	42 76	34 54	9 00	14	33 70	39 94	39 70	9 00
15	55 85	42 76	34 61	8 67	15	33 06	39 76	39 96	8 67
16	55 04	42 75	34 68	8 34	16	32 43	39 57	40 23	8 34
17	54 24	42 74	34 76	8 01	17	31 82	39 38	40 50	8 01
18	53 45	42 73	34 85	7 68	18	31 22	39 18	40 77	7 68
19	52 66	42 71	34 94	7 36	19	30 63	38 98	41 05	7 36
20	51 87	42 69	35 05	7 04	20	30 05	38 77	41 33	7 04
21	51 09	42 65	35 16	6 72	21	29 47	38 55	41 61	6 72
22	50 31	42 60	35 28	6 41	22	28 91	38 33	41 90	6 41
23	49 53	42 55	35 41	6 09	23	28 36	38 11	42 19	6 09
24	48 76	42 49	35 53	5 77	24	27 83	37 88	42 48	5 77
25	47 99	42 43	35 66	5 45	25	27 30	37 65	42 77	5 45
26	47 22	42 37	35 81	5 14	26	26 78	37 42	43 08	5 14
27	46 45	42 29	35 96	4 83	27	26 27	37 18	43 40	4 83
28	45 68	42 21	36 12	4 53	28	25 78	36 94	43 72	4 53
29	44 92	42 13	36 28	4 23	29	25 31	36 70	44 04	4 23
30	44 16	42 04	36 45	3 93					
31	43 41	41 95	36 63	3 64					
32	42 67	41 85	36 81	3 35					

APPARENT PLACES OF α AND δ URSE MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.

MARCH.					APRIL.				
Day of the Month.	α URSE MINOR. (Polaris)		δ URSE MINOR.		Day of the Month.	α URSE MINOR. (Polaris)		δ URSE MINOR.	
	R. A.	Dec. N.	R. A.	Dec. N.		R. A.	Dec. N.	R. A.	Dec. N.
	^h 1 ^m 0	^o 88 ['] 26	^h 18 ^m 24	^o 86 ['] 34		^h 1 ^m 0	^o 88 ['] 26	^h 18 ^m 24	^o 86 ['] 34
1	^s 25 ["] 31	36 ["] 70	^s 44 ["] 04	57 ["] 05	1	^s 17 ["] 35	27 ["] 85	^s 54 ["] 66	55 ["] 30
2	24 ["] 84	36 ["] 45	44 ["] 35	56 ["] 90	2	17 ["] 32	27 ["] 55	55 ["] 00	55 ["] 35
3	24 ["] 38	36 ["] 19	44 ["] 67	56 ["] 76	3	17 ["] 32	27 ["] 24	55 ["] 35	55 ["] 40
4	23 ["] 94	35 ["] 93	44 ["] 99	56 ["] 62	4	17 ["] 34	26 ["] 94	55 ["] 70	55 ["] 45
5	23 ["] 52	35 ["] 67	45 ["] 32	56 ["] 48	5	17 ["] 37	26 ["] 64	56 ["] 04	55 ["] 51
6	23 ["] 11	35 ["] 41	45 ["] 65	56 ["] 35	6	{ ^s 17 ["] 41 } { ^s 17 ["] 46 }	{ ^s 26 ["] 34 } { ^s 26 ["] 04 }	56 ["] 38	55 ["] 59
7	22 ["] 72	35 ["] 15	45 ["] 98	56 ["] 24	7	17 ["] 52	25 ["] 74	56 ["] 71	55 ["] 67
8	22 ["] 33	34 ["] 88	46 ["] 31	56 ["] 14	8	17 ["] 60	25 ["] 44	57 ["] 05	55 ["] 75
9	21 ["] 95	34 ["] 61	46 ["] 65	56 ["] 04	9	17 ["] 69	25 ["] 14	57 ["] 38	55 ["] 83
10	21 ["] 59	34 ["] 33	46 ["] 99	55 ["] 94	10	17 ["] 80	24 ["] 84	57 ["] 71	55 ["] 92
11	21 ["] 25	34 ["] 05	47 ["] 34	55 ["] 84	11	17 ["] 94	24 ["] 55	58 ["] 04	56 ["] 01
12	20 ["] 92	33 ["] 77	47 ["] 68	55 ["] 75	12	18 ["] 09	24 ["] 25	58 ["] 36	56 ["] 11
13	20 ["] 61	33 ["] 49	48 ["] 02	55 ["] 67	13	18 ["] 24	23 ["] 95	58 ["] 68	56 ["] 22
14	20 ["] 31	33 ["] 21	48 ["] 37	55 ["] 59	14	18 ["] 41	23 ["] 65	59 ["] 00	56 ["] 34
15	20 ["] 02	32 ["] 92	48 ["] 71	55 ["] 52	15	18 ["] 59	23 ["] 36	59 ["] 32	56 ["] 46
16	19 ["] 75	32 ["] 63	49 ["] 06	55 ["] 45	16	18 ["] 80	23 ["] 07	59 ["] 64	56 ["] 59
17	19 ["] 48	32 ["] 34	49 ["] 41	55 ["] 38	17	19 ["] 02	22 ["] 79	59 ["] 95	56 ["] 72
18	19 ["] 23	32 ["] 05	49 ["] 75	55 ["] 33	18	19 ["] 25	22 ["] 50	60 ["] 26	56 ["] 86
19	19 ["] 00	31 ["] 75	50 ["] 10	55 ["] 29	19	19 ["] 48	22 ["] 22	60 ["] 57	57 ["] 01
20	18 ["] 78	31 ["] 45	50 ["] 45	55 ["] 27	20	19 ["] 73	21 ["] 94	60 ["] 88	57 ["] 16
21	18 ["] 58	31 ["] 16	50 ["] 80	55 ["] 25	21	20 ["] 00	21 ["] 66	61 ["] 18	57 ["] 31
22	18 ["] 40	30 ["] 86	51 ["] 15	55 ["] 22	22	20 ["] 30	21 ["] 38	61 ["] 48	57 ["] 46
23	18 ["] 23	30 ["] 57	51 ["] 51	55 ["] 19	23	20 ["] 61	21 ["] 11	61 ["] 77	57 ["] 62
24	18 ["] 07	30 ["] 27	51 ["] 86	55 ["] 17	24	20 ["] 92	20 ["] 84	62 ["] 06	57 ["] 79
25	17 ["] 93	29 ["] 97	52 ["] 21	55 ["] 16	25		20 ["] 57	62 ["] 34	57 ["] 97
26	17 ["] 81	29 ["] 67	52 ["] 56	55 ["] 16	26		20 ["] 31	62 ["] 62	58 ["] 15
27	17 ["] 70	29 ["] 37	52 ["] 91	55 ["] 17	27		20 ["] 05	62 ["] 90	58 ["] 33
28	17 ["] 60	29 ["] 07	53 ["] 26	55 ["] 18	28		19 ["] 79	63 ["] 17	58 ["] 52
29	17 ["] 52	28 ["] 76	53 ["] 62	55 ["] 19	29			63 ["] 44	58 ["] 71
30	17 ["] 45	28 ["] 46	53 ["] 97	55 ["] 20	30			63 ["] 70	58 ["] 91
31	17 ["] 39	28 ["] 16	54 ["] 31	55 ["] 21	31				
32	17 ["] 35	27 ["] 85	54 ["] 66	55 ["] 22				59 ["] 11	

APPARENT PLACES OF α AND δ URSE MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.

MAY.					JUNE.				
Day of the Month.	α URSE MINOR. (Polaris)		δ URSE MINOR.		Day of the Month.	α URSE MINOR. (Polaris)		δ URSE MINOR.	
	R. A.	Dec. N.	R. A.	Dec. N.		R. A.	Dec. N.	R. A.	Dec. N.
	^h ^m 1 0	^o ['] 88 26	^h ^m 18 25	^o ['] 86 34		^h ^m 1 0	^o ['] 88 26	^h ^m 18 25	
1	23 ^s 46	19 ["] 04	3 ^s 96	59 ["] 11	1	41 ^s 18	13 ["] 36	9 ^s 46	
2	23 87	18 79	4 21	59 32	2	41 89	13 26	9 55	
3	24 30	18 54	4 46	59 54	3	42 60	13 16	9 63	
4	24 74	18 30	4 71	59 76	4	43 32	13 06	9 70	
5	25 19	18 07	4 95	59 98	5	44 04	12 97	9 77	
6	25 65	17 84	5 19	60 20	6	44 77	12 88	9 83	
7	26 12	17 61	5 43	60 43	7	45 51	12 80	9 88	
8	26 61	17 39	5 66	60 66	8	46 25	12 73	9 92	
9	27 11	17 17	5 88	60 89	9	47 00	12 67	9 96	
10	27 62	16 96	6 10	61 12	10	47 75	12 61	9 99	
11	28 13	16 75	6 31	61 36	11	48 50	12 54	10 02	
12	28 66	16 54	6 52	61 61	12	49 25	12 48	10 05	
13	29 20	16 33	6 72	61 87	13	50 01	12 43	10 06	
14	29 76	16 13	6 91	62 13	14	50 78	12 39	10 06	
15	30 33	15 94	7 10	62 38	15	51 56	12 36	10 07	
16	30 90	15 75	7 29	62 64	16	52 34	12 33	10 06	
17	31 48	15 57	7 47	62 90	17	53 11	12 31	10 05	
18	32 07	15 39	7 64	63 17	18	53 88	12 29	10 05	
19	32 68	15 21	7 80	63 45	19	54 66	12 28	10 03	
20	33 29	15 04	7 96	63 72	20	55 44	12 27	10 00	
21	33 90	14 88	8 12	64 00	21	56 22	12 26	9 95	
22	34 51	14 72	8 28	64 28	22	57 01	12 27	9 91	
23	35 13	14 56	8 43	64 56	23	57 80	12 28	9 86	
24	35 77	14 41	8 56	64 85	24	58 59	12 30	9 81	
25	36 42	14 26	8 69	65 14	25	59 38	12 32	9 75	
26	37 09	14 12	8 82	65 43	26	60 18	12 34	9 68	
27	37 76	13 98	8 94	65 72	27	60 98	12 36	9 60	
28	38 42	13 84	9 06	66 02	28	61 77	12 39	9 53	
29	39 10	13 71	9 17	66 31	29	62 56	12 43	9 47	
30	39 79	13 59	9 27	66 61	30	63 35	12 49	9 41	
31	40 48	13 47	9 37	66 90	31	64 15	12 54	9 35	
32	41 18	13 36	9 46	67 20					

APPARENT PLACES OF α AND δ URSÆ MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.

JULY.					AUGUST.				
Day of the Month.	α URSÆ MINOR. (Polaris)		δ URSÆ MINOR.		Day of the Month.	α URSÆ MINOR. (Polaris)		δ URSÆ MINOR.	
	R. A.	Dec. N.	R. A.	Dec. N.		R. A.	Dec. N.	R. A.	Dec. N.
	^h 1 ^m 1	^s 88 26	^h 18 ^m 25	^s 86 35		^h 1 ^m 1	^s 88 26	^h 18 ^m 24	^s 86 35
1	4 15	12 54	9 27	16 69	1	27 93	16 81	63 32	25 70
2	4 95	12 60	9 16	17 01	2	28 64	17 02	63 05	25 94
3	5 75	12 66	9 04	17 32	3	29 34	17 24	62 77	26 19
4	6 56	12 72	8 92	17 64	4	30 03	17 47	62 49	26 43
5	7 36	12 80	8 80	17 95	5	30 72	17 70	62 21	26 67
6	8 16	12 88	8 68	18 26	6	31 40	17 93	61 92	26 91
7	8 95	12 97	8 55	18 57	7	32 07	18 16	61 61	27 14
8	9 74	13 06	8 41	18 88	8	32 74	18 40	61 30	27 37
9	10 52	13 15	8 26	19 18	9	33 41	18 65	60 99	27 60
10	11 31	13 25	8 10	19 49	10	34 07	18 90	60 68	27 83
11	12 10	13 36	7 94	19 79	11	34 73	19 16	60 36	28 05
12	12 89	13 47	7 77	20 09	12	35 37	19 42	60 04	28 27
13	13 67	13 58	7 60	20 39	13	36 00	19 69	59 71	28 49
14	14 45	13 70	7 43	20 69	14	36 63	19 96	59 38	28 70
15	15 23	13 84	7 25	20 99	15	37 25	20 23	59 04	28 90
16	16 00	13 98	7 06	21 28	16	37 86	20 51	58 70	29 10
17	16 77	14 12	6 87	21 58	17	38 47	20 79	58 36	29 30
18	17 54	14 26	6 67	21 87	18	39 07	21 07	58 02	29 50
19	18 31	14 41	6 46	22 16	19	39 66	21 35	57 67	29 70
20	19 08	14 56	6 25	22 44	20	40 25	21 64	57 32	29 89
21	19 84	14 72	6 04	22 72	21	40 83	21 94	56 96	30 08
22	20 60	14 88	5 82	23 00	22	41 39	22 24	56 60	30 26
23	21 36	15 05	5 59	23 28	23	41 95	22 55	56 23	30 44
24	22 11	15 23	5 36	23 55	24	42 50	22 86	55 87	30 61
25	22 85	15 41	5 12	24 13	25	43 04	23 17	55 50	30 78
26	23 59	15 59	4 87	24 30	26	43 57	23 48	55 13	30 95
27	24 33	16 17	4 62	24 47	27	44 10	23 79	54 76	31 12
28	25 07	16 35	4 37	25 04		44 62	24 10	54 38	31 28
29	25 41	16 53	4 12	25 21		45 13	24 42	54 00	31 42
30	26 15	17 11	3 47	25 38		45 62	24 75	53 61	31 57
31	26 49	17 29	3 22	25 55		46 11	25 08	53 22	31 71
32							25 41	52 83	31 85

APPARENT PLACES OF α AND δ URSÆ MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.

SEPTEMBER.					OCTOBER.				
Day of the Month.	α URSÆ MINOR. (Polaris)		δ URSÆ MINOR.		Day of the Month.	α URSÆ MINOR. (Polaris)		δ URSÆ MINOR.	
	R. A.	Dec. N.	R. A.	Dec. N.		R. A.	Dec. N.	R. A.	Dec. N.
	^h ^m 1 1	^o ['] 88 26	^h ^m 18 24	^o ['] 86 35		^h ^m 1 1	^o ['] 88 26	^h ^m 18 24	^o ['] 86 35
1	46 ^s 58	25 41	52 ^s 83	31 85	1	56 ^s 16	36 ^s 35	40 ^s 27	33 33
2	47 05	25 74	52 43	31 99	2	56 31	36 74	39 84	33 33
3	47 51	26 08	52 03	32 13	3	56 44	37 13	39 41	33 33
4	47 96	26 42	51 63	32 26	4	56 57	37 52	38 97	33 33
5	48 40	26 76	51 23	32 38	5	56 68	37 90	38 54	33 33
6	48 83	27 10	50 83	32 50	6	56 78	38 29	38 11	33 33
7	49 25	27 45	50 43	32 62	7	56 86	38 68	37 68	33 33
8	49 65	27 80	50 02	32 73	8	56 93	39 07	37 24	33 33
9	50 05	28 15	49 61	32 83	9	56 99	39 46	36 81	33 33
10	50 44	28 51	49 20	32 93	10	57 05	39 85	36 38	33 33
11	50 82	28 87	48 79	33 02	11	57 09	40 24	35 95	33 33
12	51 19	29 23	48 37	33 11	12	57 12	40 63	35 52	33 33
13	51 56	29 60	47 95	33 20	13	57 13	41 03	35 10	33 33
14	51 92	29 96	47 54	33 28	14	57 14	41 42	34 67	33 33
15	52 25	30 32	47 13	33 36	15	57 14	41 81	34 25	33 33
16	52 56	30 68	46 71	33 44	16	57 13	42 20	33 83	33 33
17	52 87	31 04	46 29	33 51	17	57 10	42 59	33 41	33 33
18	53 18	31 41	45 86	33 57	18	57 05	42 97	32 99	33 33
19	53 49	31 78	45 43	33 63	19	56 97	43 35	32 57	33 33
20	53 78	32 15	45 00	33 68	20	56 88	43 73	32 15	33 33
21	54 05	32 53	44 58	33 72	21	56 79	44 12	31 74	33 33
22	54 31	32 91	44 15	33 76	22	56 70	44 51	31 33	33 33
23	54 56	33 29	43 72	33 80	23	56 59	44 90	30 92	33 33
24	54 80	33 67	43 28	33 84	24	56 48	45 28	30 52	33 33
25	55 03	34 06	42 85	33 87	25	56 36	45 66	30 12	33 33
26	55 24	34 44	42 42	33 89	26	56 22	46 04	29 71	33 33
27	55 44	34 81	41 99	33 91	27	56 06	46 41	29 31	33 33
28	55 64	35 19	41 56	33 92	28	55 88	46 78	28 91	33 33
29	55 82	35 57	41 13	33 92	29	55 68	47 16	28 51	31 31
30	55 99	35 96	40 70	33 92	30	55 48	47 53	28 12	31 31
31	56 16	36 35	40 27	33 92	31	55 27	47 90	27 73	31 31
					32	55 06	48 27	27 35	31 31

APPARENT PLACES OF α AND δ URSÆ MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.

NOVEMBER.					DECEMBER.				
Day of the Month.	α URSÆ MINOR. (Polaris)		δ URSÆ MINOR.		Day of the Month.	α URSÆ MINOR. (Polaris)		δ URSÆ MINOR.	
	R. A.	Dec. N.	R. A.	Dec. N.		R. A.	Dec. N.	R. A.	Dec. N.
	^h 1 ^m 1	^o 88 ['] 26	^h 18 ^m 24	^o 86 ['] 35		^h 1 ^m 1	^o 88 ['] 26	^h 18 ^m 24	^o 86 ['] 35
1	55 ^s 06	48 ["] 27	27 ^s 35	31 ["] 42	1	43 ^s 01	58 ["] 00	17 ^s 66	24 ["] 69
2	54 83	48 63	26 97	31 26	2	42 44	58 27	17 41	24 41
3	54 59	48 99	26 59	31 10	3	41 86	58 53	17 16	24 12
4	54 33	49 35	26 21	30 93	4	41 26	58 78	16 92	23 83
5	54 07	49 71	25 84	30 75	5	40 66	59 03	16 69	23 54
6	53 80	50 07	25 47	30 57	6	40 05	59 27	16 47	23 25
7	53 51	50 43	25 10	30 39	7	39 43	59 51	16 25	22 95
8	53 20	50 79	24 74	30 20	8	38 81	59 76	16 04	22 65
9	52 88	51 14	24 38	30 00	9	38 18	60 00	15 84	22 34
10	52 55	51 49	24 02	29 81	10	37 54	60 23	15 65	22 04
11	52 21	51 83	23 67	29 61	11	36 89	60 45	15 46	21 73
12	51 85	52 17	23 32	29 41	12	36 22	60 66	15 28	21 42
13	51 48	52 51	22 98	29 20	13	35 55	60 87	15 11	21 10
14	51 10	52 85	22 64	28 98	14	34 88	61 08	14 94	20 78
15	50 71	53 18	22 30	28 76	15	34 20	61 28	14 77	20 46
16	50 31	53 51	21 97	28 53	16	33 51	61 47	14 61	20 14
17	49 90	53 84	21 65	28 30	17	32 81	61 66	14 45	19 82
18	49 48	54 16	21 34	28 07	18	32 11	61 84	14 31	19 50
19	49 05	54 47	21 03	27 84	19	31 40	62 01	14 18	19 17
20	48 61	54 78	20 72	27 60	20	30 68	62 18	14 06	18 84
21	48 16	55 09	20 42	27 36	21	29 96	62 35	13 94	18 50
22	47 70	55 41	20 12	27 11	22	29 23	62 51	13 83	18 17
23	47 23	55 72	19 82	26 86	23	28 49	62 66	13 72	17 84
24	46 74	56 03	19 53	26 60	24	27 75	62 80	13 61	17 51
25	46 24	56 33	19 25				62 94	13 52	17 18
26	45 73	56 61	18 97				63 08	13 44	16 84
27	45 21	56 89	18 70				63 21	$\left\{ \begin{smallmatrix} 13^{\circ} 26' \\ 13^{\circ} 25' \end{smallmatrix} \right\}$	$\left\{ \begin{smallmatrix} 16^{\circ} 50' \\ 16^{\circ} 16' \end{smallmatrix} \right\}$
28	44 67	57 17	18 42				63 33	13 21	15 82
29	44 12	57 45					63 44	13 15	15 47
30	43 57	57 73					63 54	13 09	15 13
							63 65	13 05	14 79
31	43 01	58 00					63 7		14 45

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	γ PEGASI. (Algenib)				β Hydri.				α CASSIOPEÆ.			
	R. A.		Dec. North.		R. A.		Dec. South.		R. A.		Dec.	
	^h 0	^m 4	^o 14	ⁱ 16	^h 0	^m 17	^o 78	ⁱ 9	^h 0	^m 31	^o 55	
Jan. 1	50°15'	^s 0°11'	38°33'	["] 0°82'	5°34'	^s 0°89'	107°86'	["] 1°22'	16°54'	^s 0°28'	45°35'	
11	50°04'	0°11'	37°51'	0°92'	4°45'	0°82'	106°64'	1°80'	16°26'	0°27'	44°85'	
21	49°93'	0°09'	36°59'	0°97'	3°63'	0°74'	104°84'	2°32'	15°99'	0°26'	43°85'	
31	49°84'	0°07'	35°62'	0°99'	2°89'	0°62'	102°52'	2°78'	15°73'	0°24'	42°45'	
Feb. 10	49°77'	0°05'	34°63'	0°95'	2°27'	0°49'	99°74'	3°17'	15°49'	0°19'	40°60'	
20	49°72'	0°02'	33°68'	0°85'	1°78'	0°36'	96°57'	3°48'	15°30'	0°14'	38°40'	
Mar. 2	49°70'	0°01'	32°83'	0°71'	1°42'	0°21'	93°09'	3°69'	15°16'	0°08'	36°15'	
12	49°71'	0°05'	32°12'	0°52'	1°21'	0°05'	89°40'	3°83'	15°08'	0°01'	33°60'	
22	49°76'	0°09'	31°60'	0°29'	1°16'	0°14'	85°57'	4°26'	15°07'	0°07'	31°20'	
Apr. 1	49°85'	0°13'	31°31'	0°05'	1°30'	0°28'	81°31'	3°85'	15°14'	0°14'	28°60'	
11	49°98'	0°18'	31°36'	0°33'	1°58'	0°45'	77°46'	3°73'	15°28'	0°21'	26°40'	
21	50°16'	0°21'	31°69'	0°66'	2°03'	0°60'	73°73'	3°53'	15°49'	0°28'	24°60'	
May 1	50°37'	0°25'	32°35'	0°98'	2°63'	0°73'	70°20'	3°27'	15°77'	0°34'	23°10'	
11	50°62'	0°28'	33°33'	1°27'	3°36'	0°86'	66°93'	2°93'	16°11'	0°40'	22°10'	
21	50°90'	0°30'	34°60'	1°54'	4°22'	0°97'	64°00'	2°51'	16°51'	0°44'	21°30'	
31	51°20'	0°32'	36°14'	1°78'	5°19'	1°05'	61°49'	2°06'	16°95'	0°47'	21°30'	
June 10	51°52'	0°33'	37°92'	1°97'	6°24'	1°11'	59°43'	1°57'	17°42'	0°48'	21°95'	
20	51°85'	0°33'	39°89'	2°11'	7°35'	1°15'	57°86'	1°03'	17°90'	0°49'	22°85'	
30	52°18'	0°32'	42°00'	2°20'	8°50'	1°15'	56°83'	0°46'	18°39'	0°47'	24°25'	
July 10	52°50'	0°31'	44°20'	2°24'	9°65'	1°12'	56°37'	0°18'	18°86'	0°46'	26°04'	
20	52°81'	0°28'	46°44'	2°20'	10°77'	1°05'	56°50'	0°69'	19°32'	0°43'	28°24'	
30	53°09'	0°25'	48°64'	2°15'	11°82'	0°97'	57°19'	1°22'	19°75'	0°39'	30°78'	
Aug. 9	53°34'	0°22'	50°79'	2°03'	12°79'	0°85'	58°41'	1°72'	20°14'	0°34'	33°61'	
19	53°56'	0°18'	52°82'	1°88'	13°64'	0°70'	60°13'	2°17'	20°48'	0°29'	36°65'	
29	53°74'	0°15'	54°70'	1°68'	14°34'	0°53'	62°30'	2°52'	20°77'	0°23'	39°84'	
Sept. 8	53°89'	0°10'	56°38'	1°50'	14°87'	0°35'	64°82'	2°80'	21°00'	0°18'	43°11'	
18	53°99'	0°07'	57°88'	1°29'	15°22'	0°16'	67°62'	2°97'	21°18'	0°12'	46°42'	
28	54°06'	0°04'	59°17'	1°04'	15°38'	0°04'	70°59'	3°01'	21°30'	0°07'	49°69'	
Oct. 8	54°10'	0°00'	60°21'	0°82'	15°34'	0°23'	73°60'	2°92'	21°37'	0°01'	52°85'	
18	54°10'	0°03'	61°03'	0°59'	15°11'	0°41'	76°52'	2°73'	21°38'	0°05'	55°86'	
28	54°07'	0°05'	61°62'	0°36'	14°70'	0°57'	79°25'	2°43'	21°33'	0°09'	58°63'	
Nov. 7	54°02'	0°07'	61°98'	0°15'	14°13'	0°71'	81°68'	2°01'	21°24'	0°13'	61°10'	
17	53°95'	0°08'	62°13'	0°05'	13°42'	0°81'	83°69'	1°51'	21°11'	0°18'	63°25'	
27	53°87'	0°10'	62°08'	0°25'	12°61'	0°89'	85°20'	0°94'	20°93'	0°21'	65°01'	
Dec. 7	53°77'	0°10'	61°83'	0°45'	11°72'	0°94'	86°14'	0°32'	20°72'	0°24'	66°31'	
17	53°67'	0°11'	61°38'	0°61'	10°78'	0°94'	86°46'	0°30'	20°48'	0°27'	67°11'	
27	53°56'	0°10'	60°77'	0°74'	9°84'	0°92'	86°16'	0°92'	20°21'	0°27'	67°41'	
37	53°46'		60°03'		8°92'		85°24'		19°94'		67°18'	

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	β Ceti.		θ^1 Ceti.		α Eridani. (Achernar)	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. South.
	^h 0 ^m 35	[°] 18 ['] 52	^h 1 ^m 15	[°] 9 ['] 1	^h 1 ^m 31	[°] 58 ['] 3
Jan. 1	23 ^s 87	65 ["] 03	52 ^s 50	38 ["] 98	38 ^s 97	79 ["] 15
11	23 ^s 75	65 ["] 41	52 ^s 39	39 ["] 60	38 ^s 65	79 ["] 39
21	23 ^s 64	65 ["] 53	52 ^s 27	40 ["] 05	38 ^s 33	79 ["] 06
31	23 ^s 54	65 ["] 39	52 ^s 15	40 ["] 31	38 ^s 01	78 ["] 17
Feb. 10	23 ^s 45	64 ["] 98	52 ^s 04	40 ["] 38	37 ^s 71	76 ["] 76
20	23 ^s 37	64 ["] 29	51 ^s 94	40 ["] 23	37 ^s 44	74 ["] 86
Mar. 2	23 ^s 32	63 ["] 34	51 ^s 86	39 ["] 84	37 ^s 20	72 ["] 52
12	23 ^s 30	62 ["] 12	51 ^s 81	39 ["] 22	37 ^s 01	69 ["] 79
22	23 ^s 32	60 ["] 66	51 ^s 78	38 ["] 36	36 ^s 87	66 ["] 72
Apr. 1	23 ^s 38	58 ["] 76	51 ^s 80	37 ["] 27	36 ^s 79	63 ["] 39
11	23 ^s 48	56 ["] 82	51 ^s 86	35 ["] 78	36 ^s 78	59 ["] 88
21	23 ^s 62	54 ["] 68	51 ^s 95	34 ["] 18	36 ^s 84	55 ["] 90
May 1	23 ^s 80	52 ["] 41	52 ^s 09	32 ["] 39	36 ^s 97	52 ["] 22
11	24 ^s 02	50 ["] 03	52 ^s 28	30 ["] 42	37 ^s 18	48 ["] 60
21	24 ^s 28	47 ["] 59	52 ^s 50	28 ["] 30	37 ^s 45	45 ["] 10
31	24 ^s 56	45 ["] 15	52 ^s 76	26 ["] 09	37 ^s 78	41 ["] 81
June 10	24 ^s 87	42 ["] 76	53 ^s 04	23 ["] 84	38 ^s 16	38 ["] 78
20	25 ^s 20	40 ["] 49	53 ^s 35	21 ["] 58	38 ^s 59	36 ["] 10
30	25 ^s 53	38 ["] 38	53 ^s 67	19 ["] 39	39 ^s 06	33 ["] 85
July 10	25 ^s 86	36 ["] 49	53 ^s 99	17 ["] 31	39 ^s 54	32 ["] 06
20	26 ^s 18	34 ["] 88	54 ^s 31	15 ["] 42	40 ^s 03	30 ["] 79
30	26 ^s 49	33 ["] 57	54 ^s 62	13 ["] 75	40 ^s 52	30 ["] 08
Aug. 9	26 ^s 78	32 ["] 60	54 ^s 91	12 ["] 33	40 ^s 99	29 ["] 93
19	27 ^s 03	31 ["] 98	55 ^s 18	11 ["] 21	41 ^s 43	30 ["] 35
29	27 ^s 25	31 ["] 72	55 ^s 42	10 ["] 39	41 ^s 82	31 ["] 32
Sept. 8	27 ^s 43	31 ["] 81	55 ^s 63	9 ["] 90	42 ^s 16	32 ["] 81
18	27 ^s 57	32 ["] 22	55 ^s 80	9 ["] 72	42 ^s 45	34 ["] 75
28	27 ^s 67	32 ["] 91	55 ^s 94	9 ["] 84	42 ^s 67	37 ["] 08
Oct. 8	27 ^s 73	33 ["] 84	56 ^s 04	10 ["] 21	43 ^s 01	39 ["] 70
18	27 ^s 75	34 ["] 95	56 ^s 11	10 ["] 02	43 ^s 08	42 ["] 49
28	27 ^s 75	36 ["] 18	56 ^s 15	9 ["] 53	43 ^s 00	45 ["] 36
Nov. 7	27 ^s 72	37 ["] 48	56 ^s 10	9 ["] 44	43 ^s 06	48 ["] 19
17	27 ^s 66	38 ["] 77	56 ^s 04	9 ["] 35	43 ^s 13	50 ["] 86
27	27 ^s 58	39 ["] 97	55 ^s 58	9 ["] 26	43 ^s 18	53 ["] 24
Dec. 7	27 ^s 49	41 ["] 06	55 ^s 50	9 ["] 17	43 ^s 22	55 ["] 27
17	27 ^s 38	41 ["] 99	55 ^s 42	9 ["] 08	43 ^s 27	56 ["] 86
27	27 ^s 26	42 ["] 72	55 ^s 34	8 ["] 59	43 ^s 31	57 ["] 93
37	27 ^s 15	43 ["] 23	55 ^s 26	8 ["] 50	43 ^s 35	58 ["] 47

APPARENT PLACES OF THE PRINCIPAL FIXED STARS
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α ARIETIS.		γ Ceti.		α CETI.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec.
	^h 1 57	[°] 22 41	^h 2 34	[°] 2 32	^h 2 53	[°] 3
Jan. 1	59° 57' 0" 12	25° 34' 0" 28	51° 88' 0" 09	44° 33' 0" 64	46° 08' 0" 09	47°
11	59° 45' 0" 13	25° 06' 0" 45	51° 79' 0" 11	43° 69' 0" 58	45° 99' 0" 11	47°
21	59° 32' 0" 14	24° 61' 0" 60	51° 68' 0" 13	43° 11' 0" 50	45° 88' 0" 12	46°
31	59° 18' 0" 14	24° 01' 0" 72	51° 55' 0" 13	42° 61' 0" 40	45° 76' 0" 14	45°
Feb. 10	59° 04' 0" 14	23° 29' 0" 81	51° 42' 0" 14	42° 21' 0" 27	45° 62' 0" 14	45°
20	58° 50' 0" 12	22° 48' 0" 86	51° 28' 0" 13	41° 94' 0" 15	45° 48' 0" 14	45°
Mar. 2	58° 78' 0" 09	21° 62' 0" 87	51° 15' 0" 11	41° 79' 0" 01	45° 34' 0" 13	45°
12	58° 69' 0" 07	20° 75' 0" 80	51° 04' 0" 09	41° 80' 0" 18	45° 21' 0" 10	45°
22	58° 62' 0" 03	19° 95' 0" 71	50° 95' 0" 06	41° 98' 0" 37	45° 11' 0" 07	45°
Apr. 1	58° 59' 0" 02	19° 24' 0" 57	50° 89' 0" 02	42° 35' 0" 57	45° 04' 0" 04	45°
11	58° 61' 0" 07	18° 67' 0" 37	50° 87' 0" 02	42° 92' 0" 79	45° 00' 0" 00	46°
21	58° 68' 0" 11	18° 30' 0" 12	50° 89' 0" 07	43° 71' 1° 12	45° 00' 0" 05	46°
May 1	58° 79' 0" 17	18° 18' 0" 15	50° 96' 0" 12	44° 83' 1° 23	45° 05' 0" 11	47°
11	58° 96' 0" 21	18° 33' 0" 43	51° 08' 0" 16	46° 06' 1° 43	45° 16' 0" 14	48°
21	59° 17' 0" 25	18° 76' 0" 70	51° 24' 0" 20	47° 49' 1° 60	45° 30' 0" 19	50°
31	59° 42' 0" 28	19° 46' 0" 97	51° 44' 0" 23	49° 09' 1° 74	45° 49' 0" 22	51°
June 10	59° 70' 0" 31	20° 43' 1° 22	51° 67' 0" 27	50° 83' 1° 84	45° 71' 0" 25	53°
20	60° 01' 0" 33	21° 65' 1° 44	51° 94' 0" 29	52° 67' 1° 90	45° 96' 0" 28	55°
30	60° 34' 0" 34	23° 09' 1° 61	52° 23' 0" 31	54° 57' 1° 91	46° 24' 0" 30	56°
July 10	60° 68' 0" 34	24° 70' 1° 76	52° 54' 0" 31	56° 48' 1° 86	46° 54' 0" 31	58°
20	61° 02' 0" 34	26° 46' 1° 84	52° 85' 0" 32	58° 34' 1° 77	46° 85' 0" 32	60°
30	61° 36' 0" 32	28° 30' 1° 90	53° 17' 0" 31	60° 11' 1° 63	47° 17' 0" 31	62°
Aug. 9	61° 68' 0" 31	30° 20' 1° 90	53° 48' 0" 30	61° 74' 1° 44	47° 48' 0" 30	63°
19	61° 99' 0" 28	32° 10' 1° 86	53° 78' 0" 28	63° 18' 1° 23	47° 78' 0" 29	65°
29	62° 27' 0" 26	33° 96' 1° 79	54° 06' 0" 26	64° 41' 0" 97	48° 07' 0" 27	66°
Sept. 8	62° 53' 0" 22	35° 75' 1° 68	54° 32' 0" 24	65° 38' 0" 72	48° 34' 0" 25	67°
18	62° 75' 0" 19	37° 43' 1° 55	54° 56' 0" 21	66° 10' 0" 46	48° 59' 0" 23	68°
28	62° 94' 0" 16	38° 98' 1° 39	54° 77' 0" 18	66° 56' 0" 21	48° 82' 0" 20	68°
Oct. 8	63° 10' 0" 13	40° 37' 1° 24	54° 95' 0" 15	66° 77' 0" 03	49° 02' 0" 17	68°
18	63° 23' 0" 10	41° 61' 1° 07	55° 10' 0" 12	66° 74' 0" 24	49° 19' 0" 14	68°
28	63° 33' 0" 06	42° 68' 0" 88	55° 22' 0" 10	66° 50' 0" 41	49° 33' 0" 11	68°
Nov. 7	63° 39' 0" 03	43° 56' 0" 72	55° 32' 0" 06	66° 09' 0" 55	49° 44' 0" 08	68°
17	63° 42' 0" 01	44° 28' 0" 53	55° 38' 0" 03	65° 54' 0" 64	49° 52' 0" 05	67°
27	63° 43' 0" 03	44° 81' 0" 35	55° 41' 0" 00	64° 90' 0" 70	49° 57' 0" 03	67°
Dec. 7	63° 40' 0" 05	45° 16' 0" 17	55° 41' 0" 02	64° 20' 0" 71	49° 60' 0" 02	66°
17	63° 35' 0" 08	45° 33' 0" 02	55° 39' 0" 05	63° 49' 0" 71	49° 58' 0" 04	65°
27	63° 27' 0" 11	45° 31' 0" 21	55° 34' 0" 08	62° 78' 0" 66	49° 54' 0" 06	65°
37	63° 16' 0" 11	45° 10' 0" 21	55° 26' 0" 08	62° 12' 0" 66	49° 48' 0" 06	64°

APPARENT PLACES OF THE PRINCIPAL FIXED STARS;
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α PERSEI.		η Tauri.		γ^1 Eridani.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. South.
	^h 3 12 ^m	^o 49 16 ⁱ	^h 3 37 ^m	^o 23 35 ⁱ	^h 3 50 ^m	^o 13 58 ⁱ
Jan. 1	43° 38' ^s	42° 26' ["]	48° 63' ^s	51° 98' ["]	26° 18' ^s	36° 51' ["]
11	43° 24' 0° 14'	43° 22' 0° 96'	48° 56' 0° 07'	52° 08' 0° 10'	26° 11' 0° 07'	37° 84' 1° 33'
21	43° 05' 0° 19'	43° 85' 0° 63'	48° 46' 0° 10'	52° 06' 0° 02'	26° 01' 0° 10'	38° 93' 1° 09'
31	42° 83' 0° 22'	44° 12' 0° 27'	48° 33' 0° 13'	51° 94' 0° 12'	25° 88' 0° 13'	39° 75' 0° 82'
	0° 24'	0° 11'	0° 15'	0° 23'	0° 15'	0° 56'
Feb. 10	42° 59' 0° 25'	44° 01' 0° 49'	48° 18' 0° 16'	51° 71' 0° 34'	25° 73' 0° 16'	40° 31' 0° 27'
20	42° 34' 0° 24'	43° 52' 0° 84'	48° 02' 0° 16'	51° 37' 0° 43'	25° 57' 0° 17'	40° 58' 0° 03'
Mar. 2	42° 10' 0° 23'	42° 68' 1° 14'	47° 86' 0° 16'	50° 94' 0° 48'	25° 40' 0° 16'	40° 55' 0° 34'
12	41° 87' 0° 19'	41° 54' 1° 39'	47° 70' 0° 14'	50° 46' 0° 53'	25° 24' 0° 15'	40° 21' 0° 63'
22	41° 68' 0° 15'	40° 15' 1° 57'	47° 56' 0° 12'	49° 93' 0° 53'	25° 09' 0° 13'	39° 58' 0° 93'
Apr. 1	41° 53' 0° 09'	38° 58' 1° 68'	47° 44' 0° 08'	49° 40' 0° 49'	24° 96' 0° 10'	38° 65' 1° 19'
11	41° 44' 0° 03'	36° 90' 1° 70'	47° 36' 0° 03'	48° 91' 0° 41'	24° 86' 0° 06'	37° 46' 1° 46'
21	41° 41' 0° 03'	35° 20' 1° 65'	47° 33' 0° 01'	48° 50' 0° 31'	24° 80' 0° 02'	36° 00' 1° 70'
May 1	41° 44' 0° 12'	33° 55' 1° 70'	47° 34' 0° 07'	48° 19' 0° 15'	24° 78' 0° 03'	34° 30' 1° 92'
11	41° 56' 0° 18'	31° 85' 1° 34'	47° 41' 0° 12'	48° 04' 0° 02'	24° 81' 0° 08'	32° 38' 2° 32'
21	41° 74' 0° 24'	30° 51' 1° 09'	47° 53' 0° 18'	48° 06' 0° 22'	24° 89' 0° 12'	30° 06' 2° 26'
31	41° 98' 0° 30'	29° 42' 0° 82'	47° 71' 0° 20'	48° 28' 0° 41'	25° 01' 0° 17'	27° 80' 2° 34'
June 10	42° 28' 0° 35'	28° 60' 0° 51'	47° 91' 0° 24'	48° 69' 0° 61'	25° 18' 0° 20'	25° 46' 2° 39'
20	42° 63' 0° 39'	28° 09' 0° 18'	48° 15' 0° 28'	49° 30' 0° 77'	25° 38' 0° 24'	23° 07' 2° 36'
30	43° 02' 0° 42'	27° 91' 0° 16'	48° 43' 0° 31'	50° 07' 0° 95'	25° 62' 0° 26'	20° 71' 2° 28'
July 10	43° 44' 0° 44'	28° 07' 0° 48'	48° 74' 0° 33'	51° 02' 1° 07'	25° 88' 0° 28'	18° 43' 2° 13'
20	43° 88' 0° 45'	28° 55' 0° 80'	49° 07' 0° 33'	52° 09' 1° 17'	26° 16' 0° 30'	16° 30' 1° 92'
30	44° 33' 0° 45'	29° 35' 1° 08'	49° 40' 0° 34'	53° 26' 1° 23'	26° 46' 0° 31'	14° 38' 1° 64'
Aug. 9	44° 78' 0° 44'	30° 43' 1° 34'	49° 74' 0° 33'	54° 49' 1° 26'	26° 77' 0° 30'	12° 74' 1° 33'
19	45° 22' 0° 43'	31° 77' 1° 58'	50° 07' 0° 33'	55° 75' 1° 26'	27° 07' 0° 30'	11° 41' 0° 98'
29	45° 65' 0° 41'	33° 35' 1° 79'	50° 40' 0° 32'	57° 01' 1° 22'	27° 37' 0° 30'	10° 43' 0° 58'
Sept. 8	46° 06' 0° 38'	35° 14' 1° 94'	50° 72' 0° 30'	58° 23' 1° 16'	27° 67' 0° 28'	9° 85' 0° 17'
18	46° 44' 0° 35'	37° 08' 2° 07'	51° 02' 0° 30'	59° 39' 1° 08'	27° 95' 0° 26'	9° 68' 0° 23'
28	46° 79' 0° 32'	39° 15' 2° 18'	51° 11' 0° 30'	60° 47' 1° 08'	28° 21' 0° 24'	9° 91' 0° 60'
Oct. 8	47° 11' 0° 28'	41° 33' 2° 28'			28° 45' 0° 21'	10° 51' 0° 96'
18	47° 39' 0° 23'	43° 56' 2° 38'			28° 66' 0° 19'	11° 47' 1° 25'
28	47° 62' 0° 19'	45° 80' 2° 48'			28° 85' 0° 15'	12° 72' 1° 49'
Nov. 7	47° 81' 0° 15'	48° 03' 2° 58'			29° 00' 0° 13'	14° 21' 1° 66'
17	47° 96' 0° 09'	50° 20' 3° 08'			29° 13' 0° 10'	15° 87' 1° 75'
27	48° 05' 0° 04'	52° 27' 3° 18'			29° 23' 0° 05'	17° 62' 1° 78'
Dec. 7	48° 09' 0° 01'	54° 17' 3° 28'			29° 32' 0° 02'	19° 40' 1° 73'
17	48° 08' 0° 07'	55° 40' 3° 38'			29° 41' 0° 01'	21° 13' 1° 61'
27	48° 01' 0° 12'	57° 13' 3° 48'				22° 74' 1° 45'
37	47° 89' 0° 12'	58° 46' 3° 58'				24° 19' 1° 45'

APPARENT PLACES OF THE PRINCIPAL FIXED STARS
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α TAURI. (Aldebaran)			α AURIGÆ. (Capella)			β ORIONIS (Rigel)		
	R. A.	Dec. North.		R. A.	Dec. North.		R. A.	Dec.	
	^h 4	^m 26	[°] 16	^h 5	^m 4	[°] 45	^h 5	^m 6	
	^s 26	["] 10	["] 10	^s 4	["] 49	["] 49	^s 5	["] 8	
Jan. 1	34° 96' 00"	39° 28' 00"	40° 25' 00"	38° 98' 00"	43° 16' 00"	40° 00'			
11	34° 92' 00"	39° 10' 00"	40° 25' 00"	40° 38' 00"	43° 15' 00"	41° 00'			
21	34° 85' 00"	38° 91' 00"	40° 18' 00"	41° 64' 00"	43° 10' 00"	42° 00'			
31	34° 75' 00"	38° 72' 00"	40° 06' 00"	42° 69' 00"	43° 02' 00"	44° 00'			
Feb. 10	34° 62' 00"	38° 52' 00"	39° 89' 00"	43° 50' 00"	42° 90' 00"	44° 00'			
20	34° 47' 00"	38° 31' 00"	39° 68' 00"	44° 03' 00"	42° 75' 00"	45° 00'			
Mar. 2	34° 30' 00"	38° 10' 00"	39° 45' 00"	44° 27' 00"	42° 58' 00"	45° 00'			
12	34° 14' 00"	37° 90' 00"	39° 21' 00"	44° 20' 00"	42° 41' 00"	45° 00'			
	33° 99' 00"	37° 71' 00"	38° 97' 00"	43° 83' 00"	42° 24' 00"	45° 00'			
Apr. 1	33° 85' 00"	37° 56' 00"	38° 75' 00"	43° 19' 00"	42° 08' 00"	45° 00'			
11	33° 74' 00"	37° 47' 00"	38° 56' 00"	42° 31' 00"	41° 94' 00"	44° 00'			
21	33° 67' 00"	37° 47' 00"	38° 42' 00"	41° 25' 00"	41° 83' 00"	43° 00'			
May 1	33° 64' 00"	37° 55' 00"	38° 33' 00"	40° 05' 00"	41° 76' 00"	42° 00'			
11	33° 65' 00"	37° 76' 00"	38° 29' 00"	38° 76' 00"	41° 73' 00"	41° 00'			
21	33° 71' 00"	38° 11' 00"	38° 32' 00"	37° 45' 00"	41° 73' 00"	39° 00'			
31	33° 83' 00"	38° 65' 00"	38° 41' 00"	36° 16' 00"	41° 78' 00"	37° 00'			
June 10	33° 99' 00"	39° 29' 00"	38° 58' 00"	34° 84' 00"	41° 88' 00"	35° 00'			
20	34° 19' 00"	40° 08' 00"	38° 79' 00"	33° 76' 00"	42° 02' 00"	33° 00'			
30	34° 42' 00"	40° 97' 00"	39° 05' 00"	32° 83' 00"	42° 20' 00"	31° 00'			
July 10	34° 68' 00"	41° 94' 00"	39° 36' 00"	32° 09' 00"	42° 40' 00"	29° 00'			
20	34° 96' 00"	42° 99' 00"	39° 70' 00"	31° 54' 00"	42° 64' 00"	27° 00'			
30	35° 26' 00"	44° 06' 00"	40° 07' 00"	31° 18' 00"	42° 90' 00"	26° 00'			
Aug. 9	35° 58' 00"	45° 12' 00"	40° 47' 00"	31° 03' 00"	43° 17' 00"	24° 00'			
19	35° 90' 00"	46° 14' 00"	40° 89' 00"	31° 08' 00"	43° 46' 00"	23° 00'			
29	36° 22' 00"	47° 09' 00"	41° 31' 00"	31° 31' 00"	43° 75' 00"	22° 00'			
Sept. 8	36° 53' 00"	47° 93' 00"	41° 74' 00"	31° 72' 00"	44° 05' 00"	21° 00'			
18	36° 84' 00"	48° 64' 00"	42° 16' 00"	32° 31' 00"	44° 35' 00"	21° 00'			
28	37° 13' 00"	49° 21' 00"	42° 58' 00"	33° 05' 00"	44° 64' 00"	21° 00'			
Oct. 8	37° 41' 00"	49° 63' 00"	42° 98' 00"	33° 94' 00"	44° 92' 00"	21° 00'			
18	37° 67' 00"	49° 92' 00"	43° 37' 00"	34° 97' 00"	45° 18' 00"	22° 00'			
28	37° 91' 00"	50° 07' 00"	43° 73' 00"	36° 13' 00"	45° 43' 00"	23° 00'			
Nov. 7	38° 12' 00"	50° 12' 00"	44° 06' 00"	37° 41' 00"	45° 66' 00"	24° 00'			
17	38° 31' 00"	50° 07' 00"	44° 36' 00"	38° 80' 00"	45° 86' 00"	26° 00'			
27	38° 46' 00"	49° 96' 00"	44° 61' 00"	40° 26' 00"	46° 03' 00"	27° 00'			
Dec. 7	38° 58' 00"	49° 80' 00"	44° 81' 00"	41° 78' 00"	46° 16' 00"	29° 00'			
17	38° 66' 00"	49° 61' 00"	44° 96' 00"	43° 32' 00"	46° 26' 00"	31° 00'			
27	38° 70' 00"	49° 41' 00"	45° 05' 00"	44° 83' 00"	46° 32' 00"	32° 00'			
37	38° 70' 00"	49° 20' 00"	45° 08' 00"	46° 27' 00"	46° 34' 00"	34° 00'			

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	β TAURI.		δ ORIONIS.		α Leporis.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. South.
	^h 5 ^m 15	^o 28 ['] 27	^h 5 ^m 23	^o 0 ['] 25	^h 5 ^m 25	^o 17 ['] 56
Jan. 1	60° 26' 00.02	54° 80' 00.48	41° 67' 00.02	28° 18' 11.13	33° 49' 00.01	35° 70' 01.96
11	60° 28' 00.03	55° 28' 00.44	41° 69' 00.03	29° 31' 00.99	33° 48' 00.05	37° 66' 01.74
21	60° 25' 00.08	55° 72' 00.39	41° 66' 00.07	30° 30' 00.83	33° 43' 00.09	39° 40' 01.47
31	60° 17' 00.12	56° 11' 00.30	41° 59' 00.11	31° 13' 00.67	33° 34' 00.12	40° 87' 01.17
Feb. 10	60° 05' 00.15	56° 41' 00.20	41° 48' 00.14	31° 80' 00.48	33° 22' 00.16	42° 04' 00.85
20	59° 50' 00.17	56° 61' 00.08	41° 34' 00.16	32° 28' 00.30	33° 06' 00.18	42° 89' 00.51
Mar. 2	59° 73' 00.19	56° 69' 00.04	41° 18' 00.16	32° 58' 00.12	32° 88' 00.18	43° 40' 00.16
12	59° 54' 00.18	56° 65' 00.15	41° 02' 00.17	32° 70' 00.05	32° 70' 00.19	43° 56' 00.16
22	59° 36' 00.17	56° 50' 00.27	40° 85' 00.15	32° 65' 00.25	32° 51' 00.18	43° 40' 00.50
Apr. 1	59° 19' 00.15	56° 23' 00.35	40° 70' 00.14	32° 40' 00.42	32° 33' 00.16	42° 90' 00.81
11	59° 04' 00.11	55° 88' 00.41	40° 56' 00.12	31° 98' 00.60	32° 17' 00.14	42° 09' 01.13
21	58° 49' 00.08	55° 47' 00.43	40° 44' 00.08	31° 38' 00.79	32° 03' 00.10	40° 96' 01.42
May 1	58° 85' 00.03	55° 04' 00.44	40° 36' 00.04	30° 59' 00.95	31° 93' 00.06	39° 54' 01.67
11	58° 82' 00.02	54° 60' 00.40	40° 32' 00.00	29° 64' 11.12	31° 87' 00.02	37° 87' 1.91
21	58° 84' 00.07	54° 20' 00.34	40° 32' 00.04	28° 52' 12.26	31° 85' 00.02	35° 96' 2.11
31	58° 91' 00.11	53° 86' 00.25	40° 36' 00.09	27° 26' 13.39	31° 87' 00.07	33° 85' 2.24
June 10	59° 02' 00.18	53° 61' 00.15	40° 45' 00.14	25° 87' 14.64	31° 94' 00.12	31° 61' 2.59
20	59° 20' 00.21	53° 46' 00.04	40° 59' 00.17	24° 23' 15.54	32° 06' 00.15	29° 02' 2.38
30	59° 41' 00.25	53° 42' 00.09	40° 76' 00.20	22° 69' 15.57	32° 21' 00.19	26° 64' 2.35
July 10	59° 66' 00.27	53° 51' 00.17	40° 96' 00.23	21° 12' 15.52	32° 40' 00.22	24° 29' 2.25
20	59° 93' 00.30	53° 68' 00.27	41° 19' 00.25	19° 60' 14.45	32° 62' 00.24	22° 04' 2.08
30	60° 23' 00.32	53° 95' 00.34	41° 44' 00.27	18° 15' 13.32	32° 86' 00.27	19° 96' 1.85
Aug. 9	60° 55' 00.33	54° 29' 00.39	41° 71' 00.28	16° 83' 11.15	33° 13' 00.28	18° 11' 1.54
19	60° 88' 00.34	54° 68' 00.42	41° 99' 00.29	15° 68' 00.92	33° 41' 00.29	16° 57' 1.17
29	61° 22' 00.35	55° 10' 00.45	42° 28' 00.30	14° 76' 00.65	33° 70' 00.30	15° 40' 0.78
Sept. 8	61° 57' 00.34	55° 55' 00.44	42° 58' 00.30	14° 11' 00.36	34° 00' 00.30	14° 62' 0.36
18	61° 91' 00.34	55° 99' 00.43	42° 88' 00.30	13° 75' 00.07	34° 30' 00.30	14° 26' 0.11
28	62° 25' 00.33	56° 42' 00.41	43° 17' 00.24	13° 68' 00.24	34° 60' 00.29	14° 37' 0.56
Oct. 8	62° 58' 00.32	56° 83' 00.40	43° 43' 00.52	13° 32' 00.52	34° 89' 00.27	14° 93' 0.98
18	63° 00' 00.30	57° 23' 00.38	44° 44' 00.78	13° 44' 00.78	35° 16' 00.26	15° 91' 1.38
28	63° 20' 00.28	57° 61' 00.38	45° 22' 00.22	13° 22' 00.22	35° 42' 00.24	17° 29' 1.71
Nov. 7	63° 48' 00.28	57° 31' 00.31	46° 02' 00.17	13° 02' 00.17	35° 66' 00.22	19° 00' 1.97
17	63° 74' 00.27	57° 31' 00.31	46° 39' 00.29	12° 39' 00.29	35° 88' 00.18	20° 97' 2.17
27	63° 96' 00.27	57° 31' 00.31	46° 68' 00.34	12° 68' 00.34	36° 06' 00.15	23° 14' 2.27
Dec. 7	64° 14' 00.27	57° 31' 00.31	46° 02' 00.36	12° 02' 00.36	36° 21' 00.11	25° 41' 2.28
17	64° 28' 00.27	57° 31' 00.31	45° 38' 00.30	11° 38' 00.30	36° 32' 00.06	27° 69' 2.23
27	64° 41' 00.27	57° 31' 00.31	45° 02' 00.02	11° 02' 00.02	36° 38' 00.02	29° 92' 2.09
37	64° 54' 00.27	57° 31' 00.31	44° 28' 00.02	10° 28' 00.02	36° 40' 00.02	32° 01' 2.09

APPARENT PLACES OF THE PRINCIPAL FIXED STARS
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	ϵ ORIONIS.		α Columbæ.		α ORION	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec.
	^h 5 ^m 27	^o 1 ['] 18	^h 5 ^m 33	^o 34 ['] 9	^h 5 ^m 46	
Jan. 1	57° 43' ^s	38° 08' ["]	46° 19' ^s	52° 62' ["]	21° 67' ^s	19°
11	57° 45' 0° 02	39° 27' 1° 19	46° 16' 0° 03	55° 23' 2° 61	21° 71' 0° 04	18°
21	57° 42' 0° 03	40° 31' 1° 04	46° 08' 0° 08	57° 56' 2° 33	21° 70' 0° 01	17°
31	57° 35' 0° 07	41° 19' 0° 88	45° 95' 0° 13	59° 55' 1° 99	21° 65' 0° 05	17°
	0° 10	0° 70	0° 16	1° 59	0° 09	
Feb. 10	57° 25' 0° 13	41° 89' 0° 51	45° 79' 0° 20	61° 14' 1° 15	21° 56' 0° 12	16°
20	57° 12' 0° 16	42° 40' 0° 32	45° 59' 0° 22	62° 29' 0° 72	21° 44' 0° 15	16°
Mar. 2	56° 96' 0° 17	42° 72' 0° 13	45° 37' 0° 23	63° 01' 0° 27	21° 29' 0° 16	16°
12	56° 79' 0° 16	42° 85' 0° 05	45° 14' 0° 24	63° 28' 0° 18	21° 13' 0° 17	16°
	0° 16	0° 25	0° 23	0° 62	0° 16	
22	56° 63' 0° 14	42° 55' 0° 43	44° 67' 0° 21	62° 48' 1° 05	20° 80' 0° 14	16°
Apr. 1	56° 47' 0° 12	42° 12' 0° 62	44° 46' 0° 18	61° 43' 1° 45	20° 66' 0° 12	16°
11	56° 33' 0° 09	41° 50' 0° 81	44° 28' 0° 14	59° 98' 1° 81	20° 54' 0° 09	16°
21	56° 21' 0° 04	40° 69' 0° 98	44° 14' 0° 11	58° 17' 2° 15	20° 45' 0° 06	17°
May 1	56° 12' 0° 00	39° 71' 1° 14	44° 03' 0° 06	56° 02' 2° 43	20° 39' 0° 01	17°
11	56° 08' 0° 04	38° 57' 1° 30	43° 97' 0° 01	53° 59' 2° 66	20° 38' 0° 03	18°
21	56° 12' 0° 08	37° 27' 1° 42	43° 96' 0° 03	50° 93' 2° 84	20° 41' 0° 07	19°
31	56° 20' 0° 13	35° 85' 1° 68	43° 99' 0° 10	48° 09' 3° 23	20° 48' 0° 13	20°
June 10	56° 33' 0° 16	34° 17' 1° 59	44° 09' 0° 13	44° 86' 2° 98	20° 61' 0° 15	21°
20	56° 49' 0° 20	32° 58' 1° 59	44° 22' 0° 17	41° 88' 2° 91	20° 76' 0° 19	22°
July 10	56° 69' 0° 22	30° 99' 1° 55	44° 39' 0° 21	38° 97' 2° 76	20° 95' 0° 22	23°
	0° 25	1° 45	0° 25	2° 53	0° 24	
20	56° 91' 0° 27	27° 99' 1° 34	44° 85' 0° 27	33° 68' 2° 25	21° 41' 0° 26	25°
30	57° 16' 0° 28	26° 65' 1° 17	45° 12' 0° 30	31° 43' 1° 87	21° 67' 0° 28	26°
Aug. 9	57° 43' 0° 29	25° 48' 0° 94	45° 42' 0° 31	29° 56' 1° 41	21° 95' 0° 29	27°
19	57° 71' 0° 29	24° 54' 0° 64	45° 73' 0° 32	28° 15' 0° 90	22° 24' 0° 30	28°
	0° 30	0° 35	0° 33	0° 36	0° 30	
29	58° 00' 0° 29	23° 55' 0° 06	46° 05' 0° 32	27° 25' 0° 19	22° 54' 0° 30	28°
Sept. 8	58° 29' 0° 29	23° 49' 0° 25	46° 38' 0° 32	26° 89' 0° 76	22° 84' 0° 30	28°
18	58° 59' 0° 28	23° 49' 0° 25	46° 70' 0° 32	27° 08' 0° 76	23° 14' 0° 30	28°
28	58° 88' 0° 28	24° 29' 0° 55	47° 02' 0° 30	27° 84' 1° 28	23° 44' 0° 29	28°
	0° 26	0° 81	0° 28	1° 78	0° 29	
Oct. 8	59° 17' 0° 25	25° 10' 1° 05	47° 32' 0° 26	29° 12' 2° 21	24° 02' 0° 27	27°
18	59° 45' 0° 23	27° 38' 1° 23	47° 86' 0° 23	33° 11' 2° 53	24° 29' 0° 24	27°
28	59° 71' 0° 19	28° 74' 1° 36	48° 09' 0° 19	35° 64' 2° 80	24° 53' 0° 22	26°
Nov. 7	59° 96' 0° 16	30° 15' 1° 41	48° 28' 0° 15	38° 44' 2° 93	24° 75' 0° 19	25°
	0° 13	1° 42	0° 10	2° 98	0° 15	
17	60° 67' 0° 10	31° 57' 1° 37	48° 43' 0° 05	41° 37' 2° 91	24° 94' 0° 11	24°
27	60° 77' 0° 05	32° 94' 1° 28	48° 58' 0° 01	44° 35' 2° 74	25° 09' 0° 06	23°
Dec. 7	60° 82' 0° 03	34° 22' 1° 28	48° 57' 0° 01	50° 00' 2° 74	25° 26' 0° 06	21°
17	60° 67' 0° 13	31° 57' 1° 42	48° 53' 0° 10	44° 35' 2° 98	25° 09' 0° 15	23°
27	60° 77' 0° 05	32° 94' 1° 28	48° 58' 0° 01	47° 26' 2° 74	25° 20' 0° 06	22°
37	60° 82' 0° 03	34° 22' 1° 28	48° 57' 0° 01	50° 00' 2° 74	25° 26' 0° 06	21°

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	μ Geminorum.		α Argus. (Canopus)		51 (Hev.) Cephei.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. North.
	^h ₆ ^m ₁₃	[°] ₂₂ ['] ₃₅	^h ₆ ^m ₂₀	[°] ₅₂ ['] ₃₆	^h ₆ ^m ₂₁	[°] ₈₇ ['] ₁₅
n. 1	^s ₆ ^s ₇₀	["] ₃₂ ["] ₃₂	^s ₂₂ ^s ₁₀	["] ₂₈ ["] ₄₆	^s ₇₅ ^s ₆₆	["] ₅₇ ["] ₂₇
11	^s ₆ ^s ₇₇	["] ₃₂ ["] ₄₀	^s ₂₂ ^s ₀₇	["] ₃₁ ["] ₇₉	^s ₇₅ ^s ₈₃	["] ₆₀ ["] ₅₄
21	^s ₆ ^s ₈₀	["] ₃₂ ["] ₅₅	^s ₂₁ ^s ₉₇	["] ₃₄ ["] ₈₈	^s ₇₅ ^s ₀₉	["] ₆₃ ["] ₇₀
31	^s ₆ ^s ₇₇	["] ₃₂ ["] ₇₅	^s ₂₁ ^s ₈₀	["] ₃₇ ["] ₆₄	^s ₇₃ ^s ₄₇	["] ₆₆ ["] ₆₅
b. 10	^s ₆ ^s ₇₀	["] ₃₂ ["] ₉₈	^s ₂₁ ^s ₅₇	["] ₄₀ ["] ₀₁	^s ₇₁ ^s ₀₈	["] ₆₉ ["] ₂₇
20	^s ₆ ^s ₅₈	["] ₃₃ ["] ₂₀	^s ₂₁ ^s ₂₉	["] ₄₁ ["] ₉₃	^s ₆₇ ^s ₉₉	["] ₇₁ ["] ₄₅
ar. 2	^s ₆ ^s ₄₄	["] ₃₃ ["] ₄₁	^s ₂₀ ^s ₉₈	["] ₄₃ ["] ₃₆	^s ₆₄ ^s ₃₈	["] ₇₃ ["] ₁₄
12	^s ₆ ^s ₂₈	["] ₃₃ ["] ₅₈	^s ₂₀ ^s ₆₄	["] ₄₄ ["] ₂₉	^s ₆₀ ^s ₃₉	["] ₇₄ ["] ₂₆
22	^s ₆ ^s ₁₀	["] ₃₃ ["] ₆₉	^s ₂₀ ^s ₂₈	["] ₄₄ ["] ₆₉	^s ₅₆ ^s ₂₀	["] ₇₄ ["] ₇₈
or. 1	^s ₅ ^s ₉₃	["] ₃₃ ["] ₇₅	^s ₁₉ ^s ₉₃	["] ₄₄ ["] ₅₇	^s ₅₂ ^s ₀₀	["] ₇₄ ["] ₇₀
11	^s ₅ ^s ₇₇	["] ₃₃ ["] ₇₅	^s ₁₉ ^s ₅₉	["] ₄₃ ["] ₉₃	^s ₄₇ ^s ₉₅	["] ₇₄ ["] ₀₃
21	^s ₅ ^s ₆₃	["] ₃₃ ["] ₇₁	^s ₁₉ ^s ₂₇	["] ₄₂ ["] ₈₁	^s ₄₄ ^s ₂₁	["] ₇₂ ["] ₈₀
ay 1	^s ₅ ^s ₅₃	["] ₃₃ ["] ₆₄	^s ₁₈ ^s ₉₈	["] ₄₁ ["] ₂₂	^s ₄₀ ^s ₉₄	["] ₇₁ ["] ₀₈
11	^s ₅ ^s ₄₅	["] ₃₃ ["] ₅₆	^s ₁₈ ^s ₇₄	["] ₃₉ ["] ₂₂	^s ₃₈ ^s ₂₃	["] ₆₈ ["] ₉₂
21	^s ₅ ^s ₄₁	["] ₃₃ ["] ₄₈	^s ₁₈ ^s ₅₅	["] ₃₆ ["] ₈₂	^s ₃₆ ^s ₂₀	["] ₆₆ ["] ₄₁
31	^s ₅ ^s ₄₃	["] ₃₃ ["] ₄₂	^s ₁₈ ^s ₄₁	["] ₃₄ ["] ₁₀	^s ₃₄ ^s ₉₂	["] ₆₃ ["] ₆₃
ine 10	^s ₅ ^s ₄₉	["] ₃₃ ["] ₄₀	^s ₁₈ ^s ₃₃	["] ₃₁ ["] ₁₂	^s ₃₄ ^s ₃₉	["] ₆₀ ["] ₆₈
20	^s ₅ ^s ₅₉	["] ₃₃ ["] ₄₂	^s ₁₈ ^s ₃₂	["] ₂₇ ["] ₉₆	^s ₃₄ ^s ₆₈	["] ₅₇ ["] ₆₄
30	^s ₅ ^s ₇₄	["] ₃₃ ["] ₄₉	^s ₁₈ ^s ₃₇	["] ₂₄ ["] ₃₆	^s ₃₅ ^s ₉₀	["] ₅₄ ["] ₃₁
ly 10	^s ₅ ^s ₉₂	["] ₃₃ ["] ₆₀	^s ₁₈ ^s ₄₈	["] ₂₁ ["] ₀₈	^s ₃₇ ^s ₈₀	["] ₅₁ ["] ₃₅
20	^s ₆ ^s ₁₄	["] ₃₃ ["] ₇₅	^s ₁₈ ^s ₆₄	["] ₁₇ ["] ₈₈	^s ₄₀ ^s ₄₃	["] ₄₈ ["] ₅₆
30	^s ₆ ^s ₃₈	["] ₃₃ ["] ₉₂	^s ₁₈ ^s ₈₆	["] ₁₄ ["] ₈₇	^s ₄₃ ^s ₇₁	["] ₄₅ ["] ₉₉
ag. 9	^s ₆ ^s ₆₅	["] ₃₄ ["] ₀₉	^s ₁₉ ^s ₁₃	["] ₁₂ ["] ₁₃	^s ₄₇ ^s ₅₈	["] ₄₃ ["] ₇₀
19	^s ₆ ^s ₉₄	["] ₃₄ ["] ₂₄	^s ₁₉ ^s ₄₄	["] ₉ ["] ₇₅	^s ₅₁ ^s ₉₆	["] ₄₁ ["] ₇₄
29	^s ₇ ^s ₂₄	["] ₃₄ ["] ₃₅	^s ₁₉ ^s ₇₉	["] ₇ ["] ₈₄	^s ₅₆ ^s ₇₆	["] ₄₀ ["] ₁₄
pt. 8	^s ₇ ^s ₅₆	["] ₃₄ ["] ₄₂	^s ₂₀ ^s ₁₇	["] ₆ ["] ₄₇	^s ₆₁ ^s ₉₀	["] ₃₈ ["] ₉₅
18	^s ₇ ^s ₈₈	["] ₃₄ ["] ₄₂	^s ₂₀ ^s ₅₆	["] ₅ ["] ₆₇	^s ₆₇ ^s ₂₇	["] ₃₈ ["] ₂₀
28	^s ₈ ^s ₂₁	["] ₃₄ ["] ₃₄	^s ₂₀ ^s ₉₇	["] ₅ ["] ₄₈	^s ₇₂ ^s ₇₇	["] ₃₇ ["] ₈₉
ct. 8	^s ₈ ^s ₅₄	["] ₃₄ ["] ₁₉	^s ₂₁ ^s ₃₈	["] ₅ ["] ₇₉	^s ₅ ^s ₅₄	["] ₃₈ ["] ₀₆
18	^s ₈ ^s ₈₇	["] ₃₃ ["] ₉₈	^s ₂₁ ^s ₇₈	["] ₇ ["] ₀₀	^s ₅ ^s ₇₃	["] ₃₈ ["] ₇₁
28	^s ₉ ^s ₁₉	["] ₃₃ ["] ₇₂	^s ₂₂ ^s ₁₆	["] ₈ ["] ₇₅	^s ₅ ^s ₉₈	["] ₃₉ ["] ₈₄
ov. 7	^s ₉ ^s ₅₀	["] ₃₃ ["] ₄₃	^s ₂₂ ^s ₅₂	["] ₁₁ ["] ₀₀	^s ₄ ^s ₈₈	["] ₄₁ ["] ₄₂
17	^s ₉ ^s ₇₉	["] ₃₃ ["] ₁₅	^s ₁₃ ^s ₇₄	["] ₁₃ ["] ₇₄	^s ₄ ^s ₃₃	["] ₄₃ ["] ₄₃
27	^s ₁₀ ^s ₀₅	["] ₃₂ ["] ₈₈	^s ₁₆ ^s ₈₁	["] ₁₆ ["] ₈₁	^s ₃ ^s ₈₉	["] ₄₅ ["] ₈₅
ec. 7	^s ₁₀ ^s ₂₈	["] ₃₂ ["] ₆₇	^s ₂₀ ^s ₁₇	["] ₂₀ ["] ₁₇	^s ₃ ^s ₄₃	["] ₄₈ ["] ₆₀
17	^s ₁₀ ^s ₄₈	["] ₃₂ ["] ₅₂	^s ₂₃ ^s ₅₄	["] ₂₃ ["] ₅₄	^s ₃ ^s ₄₁	["] ₅₁ ["] ₆₀
27	^s ₁₀ ^s ₆₃	["] ₃₂ ["] ₄₅	^s ₂₇ ^s ₀₀	["] ₂₇ ["] ₀₀	^s ₃ ^s ₄₁	["] ₅₄ ["] ₇₈
37	^s ₁₀ ^s ₇₃	["] ₃₂ ["] ₄₆	^s ₃₀ ^s ₁₆	["] ₃₀ ["] ₁₆	^s ₃ ^s ₄₁	["] ₅₄ ["] ₇₈

APPARENT PLACES OF THE PRINCIPAL FIXED STARS
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α CANIS MAJORIS. (Sirius)				ϵ Canis Majoris.				δ Geminorum			
	R. A.		Dec. South.		R. A.		Dec. South.		R. A.		Dec.	
	^h 6	^m 37	^o 16	ⁱ 29	^h 6	^m 52	^o 28	ⁱ 44	^h 7	^m 10	^o 2	
Jan. 1	58 ^s ·69	0 ^s ·06	45 ^s ·73	2 ^s ·25	14 ^s ·35	0 ^s ·06	70 ^s ·50	2 ^s ·82	23 ^s ·86	0 ^s ·13	38 ^s ·	
11	58 ^s ·75	0 ^s ·02	47 ^s ·98	2 ^s ·08	14 ^s ·41	0 ^s ·01	73 ^s ·32	2 ^s ·65	23 ^s ·99	0 ^s ·08	38 ^s ·	
21	58 ^s ·77	0 ^s ·03	50 ^s ·06	1 ^s ·85	14 ^s ·42	0 ^s ·03	75 ^s ·97	2 ^s ·39	24 ^s ·07	0 ^s ·03	38 ^s ·	
31	58 ^s ·74	0 ^s ·08	51 ^s ·91	1 ^s ·58	14 ^s ·39	0 ^s ·09	78 ^s ·36	2 ^s ·09	24 ^s ·10	0 ^s ·02	38 ^s ·	
Feb. 10	58 ^s ·66	0 ^s ·12	53 ^s ·49	1 ^s ·28	14 ^s ·30	0 ^s ·13	80 ^s ·45	1 ^s ·75	24 ^s ·08	0 ^s ·07	38 ^s ·	
20	58 ^s ·54	0 ^s ·15	54 ^s ·77	0 ^s ·96	14 ^s ·17	0 ^s ·17	82 ^s ·20	1 ^s ·35	24 ^s ·01	0 ^s ·11	38 ^s ·	
Mar. 2	58 ^s ·39	0 ^s ·17	55 ^s ·73	0 ^s ·65	14 ^s ·00	0 ^s ·19	83 ^s ·55	0 ^s ·97	23 ^s ·90	0 ^s ·14	39 ^s ·	
12	58 ^s ·22	0 ^s ·18	56 ^s ·38	0 ^s ·32	13 ^s ·81	0 ^s ·21	84 ^s ·52	0 ^s ·56	23 ^s ·76	0 ^s ·16	39 ^s ·	
22	58 ^s ·04	0 ^s ·18	56 ^s ·70	0 ^s ·01	13 ^s ·60	0 ^s ·21	85 ^s ·08	0 ^s ·15	23 ^s ·60	0 ^s ·17	39 ^s ·	
Apr. 1	57 ^s ·86	0 ^s ·18	56 ^s ·71	0 ^s ·32	13 ^s ·39	0 ^s ·21	85 ^s ·23	0 ^s ·25	23 ^s ·43	0 ^s ·17	40 ^s ·	
11	57 ^s ·68	0 ^s ·16	56 ^s ·39	0 ^s ·63	13 ^s ·18	0 ^s ·20	84 ^s ·98	0 ^s ·65	23 ^s ·26	0 ^s ·16	40 ^s ·	
21	57 ^s ·52	0 ^s ·14	55 ^s ·76	0 ^s ·91	12 ^s ·98	0 ^s ·17	84 ^s ·33	1 ^s ·03	23 ^s ·10	0 ^s ·13	40 ^s ·	
May 1	57 ^s ·38	0 ^s ·11	54 ^s ·85	1 ^s ·19	12 ^s ·81	0 ^s ·14	83 ^s ·30	1 ^s ·38	22 ^s ·97	0 ^s ·10	40 ^s ·	
11	57 ^s ·27	0 ^s ·08	53 ^s ·66	1 ^s ·43	12 ^s ·67	0 ^s ·11	81 ^s ·92	1 ^s ·70	22 ^s ·87	0 ^s ·07	40 ^s ·	
21	57 ^s ·19	0 ^s ·03	52 ^s ·23	1 ^s ·66	12 ^s ·56	0 ^s ·07	80 ^s ·22	1 ^s ·98	22 ^s ·80	0 ^s ·04	40 ^s ·	
31	57 ^s ·16	0 ^s ·00	50 ^s ·57	1 ^s ·83	12 ^s ·49	0 ^s ·03	78 ^s ·24	2 ^s ·22	22 ^s ·76	0 ^s ·00	40 ^s ·	
June 10	57 ^s ·16	0 ^s ·04	48 ^s ·74	1 ^s ·98	12 ^s ·46	0 ^s ·01	76 ^s ·02	2 ^s ·42	22 ^s ·76	0 ^s ·05	40 ^s ·	
20	57 ^s ·20	0 ^s ·08	46 ^s ·76	2 ^s ·06	12 ^s ·47	0 ^s ·05	73 ^s ·60	2 ^s ·53	22 ^s ·81	0 ^s ·09	40 ^s ·	
30	57 ^s ·28	0 ^s ·13	44 ^s ·70	2 ^s ·31	12 ^s ·52	0 ^s ·10	71 ^s ·07	2 ^s ·87	22 ^s ·90	0 ^s ·13	40 ^s ·	
July 10	57 ^s ·41	0 ^s ·16	42 ^s ·39	2 ^s ·06	12 ^s ·62	0 ^s ·14	68 ^s ·20	2 ^s ·55	23 ^s ·03	0 ^s ·16	40 ^s ·	
20	57 ^s ·57	0 ^s ·18	40 ^s ·33	1 ^s ·96	12 ^s ·76	0 ^s ·17	65 ^s ·65	2 ^s ·45	23 ^s ·19	0 ^s ·20	40 ^s ·	
30	57 ^s ·75	0 ^s ·21	38 ^s ·37	1 ^s ·78	12 ^s ·93	0 ^s ·20	63 ^s ·20	2 ^s ·26	23 ^s ·39	0 ^s ·22	40 ^s ·	
Aug. 9	57 ^s ·96	0 ^s ·24	36 ^s ·59	1 ^s ·53	13 ^s ·13	0 ^s ·23	60 ^s ·94	1 ^s ·99	23 ^s ·61	0 ^s ·24	40 ^s ·	
19	58 ^s ·20	0 ^s ·26	35 ^s ·06	1 ^s ·24	13 ^s ·36	0 ^s ·26	58 ^s ·95	1 ^s ·66	23 ^s ·85	0 ^s ·27	39 ^s ·	
29	58 ^s ·46	0 ^s ·27	33 ^s ·82	0 ^s ·89	13 ^s ·62	0 ^s ·28	57 ^s ·29	1 ^s ·24	24 ^s ·12	0 ^s ·29	39 ^s ·	
Sept. 8	58 ^s ·73	0 ^s ·29	32 ^s ·93	0 ^s ·47	13 ^s ·90	0 ^s ·29	56 ^s ·05	0 ^s ·76	24 ^s ·41	0 ^s ·30	39 ^s ·	
18	59 ^s ·02	0 ^s ·29	32 ^s ·46	0 ^s ·05	14 ^s ·19	0 ^s ·31	55 ^s ·29	0 ^s ·27	24 ^s ·71	0 ^s ·32	38 ^s ·	
28	59 ^s ·31	0 ^s ·30	32 ^s ·41	0 ^s ·40	14 ^s ·50	0 ^s ·32	55 ^s ·02	0 ^s ·26	25 ^s ·03	0 ^s ·33	38 ^s ·	
Oct. 8	59 ^s ·61	0 ^s ·30	32 ^s ·81	0 ^s ·84	14 ^s ·82	0 ^s ·32	55 ^s ·28	0 ^s ·82	25 ^s ·36	0 ^s ·33	37 ^s ·	
18	59 ^s ·91	0 ^s ·30	33 ^s ·65	1 ^s ·24	15 ^s ·14	0 ^s ·31	56 ^s ·10	1 ^s ·32	25 ^s ·69	0 ^s ·34	37 ^s ·	
28	60 ^s ·21	0 ^s ·28	34 ^s ·89	1 ^s ·63	15 ^s ·45	0 ^s ·31	57 ^s ·42	1 ^s ·78	26 ^s ·03	0 ^s ·33	36 ^s ·	
Nov. 7	60 ^s ·49	0 ^s ·27	36 ^s ·52	1 ^s ·95	15 ^s ·76	0 ^s ·29	59 ^s ·20	2 ^s ·20	26 ^s ·36	0 ^s ·32	35 ^s ·	
17	60 ^s ·76	0 ^s ·25	38 ^s ·47	2 ^s ·19	16 ^s ·05	0 ^s ·26	61 ^s ·40	2 ^s ·54	26 ^s ·68	0 ^s ·31	35 ^s ·	
Dec. 7	61 ^s ·01	0 ^s ·22	40 ^s ·66	2 ^s ·36	16 ^s ·31	0 ^s ·23	63 ^s ·94	2 ^s ·77	26 ^s ·99	0 ^s ·28	34 ^s ·	
17	61 ^s ·23	0 ^s ·18	43 ^s ·02	2 ^s ·43	16 ^s ·54	0 ^s ·19	66 ^s ·71	2 ^s ·91	27 ^s ·27	0 ^s ·25	33 ^s ·	
27	61 ^s ·41	0 ^s ·13	45 ^s ·45	2 ^s ·44	16 ^s ·73	0 ^s ·14	69 ^s ·62	2 ^s ·96	27 ^s ·52	0 ^s ·21	33 ^s ·	
37	61 ^s ·54	0 ^s ·09	47 ^s ·89	2 ^s ·35	16 ^s ·87	0 ^s ·09	72 ^s ·58	2 ^s ·92	27 ^s ·73	0 ^s ·16	32 ^s ·	
37	61 ^s ·63		50 ^s ·24		16 ^s ·96		75 ^s ·50		27 ^s ·89		32 ^s ·	

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α^2 GEMINORUM. (Castor)		α CANIS MINORIS. (Procyon)		β GEMINORUM. (Pollux)	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 7 ^m 24	[°] 32 ⁱ 14	^h 7 ^m 30	[°] 5 ⁱ 38	^h 7 ^m 35	[°] 28 ⁱ 24
n. 1	12 ^s 42 ^s 0 ^s 16	24 ^s 93 ^s 0 ^s 48	46 ^s 82 ^s 0 ^s 14	20 ^s 84 ^s 1 ^s 22	20 ^s 89 ^s 0 ^s 17	54 ^s 05 ^s 0 ^s 20
11	12 ^s 58 ^s 0 ^s 11	25 ^s 41 ^s 0 ^s 63	46 ^s 96 ^s 0 ^s 09	19 ^s 62 ^s 1 ^s 05	21 ^s 06 ^s 0 ^s 11	54 ^s 25 ^s 0 ^s 38
21	12 ^s 69 ^s 0 ^s 04	26 ^s 04 ^s 0 ^s 75	47 ^s 05 ^s 0 ^s 03	18 ^s 57 ^s 0 ^s 87	21 ^s 17 ^s 0 ^s 05	54 ^s 63 ^s 0 ^s 50
31	12 ^s 73 ^s 0 ^s 02	26 ^s 79 ^s 0 ^s 80	47 ^s 08 ^s 0 ^s 01	17 ^s 70 ^s 0 ^s 71	21 ^s 22 ^s 0 ^s 00	55 ^s 13 ^s 0 ^s 60
ab. 10	12 ^s 71 ^s 0 ^s 06	27 ^s 59 ^s 0 ^s 82	47 ^s 07 ^s 0 ^s 06	16 ^s 99 ^s 0 ^s 53	21 ^s 22 ^s 0 ^s 05	55 ^s 73 ^s 0 ^s 67
20	12 ^s 65 ^s 0 ^s 11	28 ^s 41 ^s 0 ^s 80	47 ^s 01 ^s 0 ^s 09	16 ^s 46 ^s 0 ^s 35	21 ^s 17 ^s 0 ^s 10	56 ^s 40 ^s 0 ^s 67
ar. 2	12 ^s 54 ^s 0 ^s 14	29 ^s 21 ^s 0 ^s 72	46 ^s 92 ^s 0 ^s 12	16 ^s 11 ^s 0 ^s 20	21 ^s 07 ^s 0 ^s 13	57 ^s 07 ^s 0 ^s 64
12	12 ^s 40 ^s 0 ^s 17	29 ^s 93 ^s 0 ^s 60	46 ^s 80 ^s 0 ^s 15	15 ^s 91 ^s 0 ^s 05	20 ^s 94 ^s 0 ^s 16	57 ^s 71 ^s 0 ^s 57
22	12 ^s 23 ^s 0 ^s 19	30 ^s 53 ^s 0 ^s 46	46 ^s 65 ^s 0 ^s 16	15 ^s 86 ^s 0 ^s 06	20 ^s 78 ^s 0 ^s 18	58 ^s 28 ^s 0 ^s 47
pr. 1	12 ^s 04 ^s 0 ^s 19	30 ^s 99 ^s 0 ^s 29	46 ^s 49 ^s 0 ^s 15	15 ^s 92 ^s 0 ^s 18	20 ^s 60 ^s 0 ^s 17	58 ^s 75 ^s 0 ^s 36
11	11 ^s 85 ^s 0 ^s 17	31 ^s 28 ^s 0 ^s 14	46 ^s 34 ^s 0 ^s 15	16 ^s 10 ^s 0 ^s 29	20 ^s 43 ^s 0 ^s 17	59 ^s 11 ^s 0 ^s 23
21	11 ^s 68 ^s 0 ^s 15	31 ^s 42 ^s 0 ^s 03	46 ^s 19 ^s 0 ^s 14	16 ^s 39 ^s 0 ^s 38	20 ^s 26 ^s 0 ^s 15	59 ^s 34 ^s 0 ^s 09
ay 1	11 ^s 53 ^s 0 ^s 12	31 ^s 39 ^s 0 ^s 18	46 ^s 05 ^s 0 ^s 11	16 ^s 77 ^s 0 ^s 47	20 ^s 11 ^s 0 ^s 12	59 ^s 43 ^s 0 ^s 04
11	11 ^s 41 ^s 0 ^s 09	31 ^s 21 ^s 0 ^s 33	45 ^s 94 ^s 0 ^s 08	17 ^s 24 ^s 0 ^s 56	19 ^s 99 ^s 0 ^s 09	59 ^s 39 ^s 0 ^s 15
21	11 ^s 32 ^s 0 ^s 05	30 ^s 88 ^s 0 ^s 44	45 ^s 86 ^s 0 ^s 05	17 ^s 80 ^s 0 ^s 63	19 ^s 90 ^s 0 ^s 06	59 ^s 24 ^s 0 ^s 25
31	11 ^s 27 ^s 0 ^s 01	30 ^s 44 ^s 0 ^s 53	45 ^s 81 ^s 0 ^s 02	18 ^s 43 ^s 0 ^s 69	19 ^s 84 ^s 0 ^s 02	58 ^s 99 ^s 0 ^s 34
me 10	11 ^s 26 ^s 0 ^s 03	29 ^s 91 ^s 0 ^s 61	45 ^s 79 ^s 0 ^s 02	19 ^s 12 ^s 0 ^s 75	19 ^s 82 ^s 0 ^s 02	58 ^s 65 ^s 0 ^s 42
20	11 ^s 29 ^s 0 ^s 08	29 ^s 30 ^s 0 ^s 66	45 ^s 81 ^s 0 ^s 06	19 ^s 87 ^s 0 ^s 78	19 ^s 84 ^s 0 ^s 06	58 ^s 23 ^s 0 ^s 48
30	11 ^s 37 ^s 0 ^s 12	28 ^s 64 ^s 0 ^s 71	45 ^s 87 ^s 0 ^s 08	20 ^s 65 ^s 0 ^s 79	19 ^s 90 ^s 0 ^s 11	57 ^s 75 ^s 0 ^s 51
ily 10	11 ^s 49 ^s 0 ^s 17	27 ^s 93 ^s 0 ^s 79	45 ^s 95 ^s 0 ^s 14	21 ^s 44 ^s 0 ^s 85	20 ^s 01 ^s 0 ^s 15	57 ^s 24 ^s 0 ^s 55
20	11 ^s 66 ^s 0 ^s 19	27 ^s 14 ^s 0 ^s 75	46 ^s 09 ^s 0 ^s 15	22 ^s 29 ^s 0 ^s 72	20 ^s 16 ^s 0 ^s 17	56 ^s 69 ^s 0 ^s 58
30	11 ^s 85 ^s 0 ^s 23	26 ^s 39 ^s 0 ^s 76	46 ^s 24 ^s 0 ^s 18	23 ^s 01 ^s 0 ^s 64	20 ^s 33 ^s 0 ^s 21	56 ^s 11 ^s 0 ^s 61
ug. 9	12 ^s 08 ^s 0 ^s 25	25 ^s 63 ^s 0 ^s 77	46 ^s 42 ^s 0 ^s 21	23 ^s 65 ^s 0 ^s 49	20 ^s 54 ^s 0 ^s 23	55 ^s 50 ^s 0 ^s 66
19	12 ^s 33 ^s 0 ^s 28	24 ^s 86 ^s 0 ^s 79	46 ^s 63 ^s 0 ^s 23	24 ^s 14 ^s 0 ^s 34	20 ^s 77 ^s 0 ^s 26	54 ^s 84 ^s 0 ^s 70
29	12 ^s 61 ^s 0 ^s 31	24 ^s 07 ^s 0 ^s 79	46 ^s 86 ^s 0 ^s 24	24 ^s 48 ^s 0 ^s 14	21 ^s 03 ^s 0 ^s 29	54 ^s 14 ^s 0 ^s 74
pt. 8	12 ^s 92 ^s 0 ^s 32	23 ^s 28 ^s 0 ^s 79	47 ^s 10 ^s 0 ^s 27	24 ^s 62 ^s 0 ^s 08	21 ^s 32 ^s 0 ^s 30	53 ^s 40 ^s 0 ^s 78
18	13 ^s 24 ^s 0 ^s 34	22 ^s 49 ^s 0 ^s 79	47 ^s 37 ^s 0 ^s 29	24 ^s 54 ^s 0 ^s 32	21 ^s 62 ^s 0 ^s 32	52 ^s 62 ^s 0 ^s 82
28	13 ^s 58 ^s 0 ^s 36	21 ^s 70 ^s 0 ^s 78	47 ^s 66 ^s 0 ^s 34	24 ^s 22 ^s 0 ^s 57	21 ^s 94 ^s 0 ^s 34	51 ^s 80 ^s 0 ^s 84
et. 8	13 ^s 94 ^s 0 ^s 36	20 ^s 92 ^s 0 ^s 74	47	23 ^s 65 ^s 0 ^s 81	22 ^s 28 ^s 0 ^s 35	50 ^s 96 ^s 0 ^s 85
18	14 ^s 30 ^s 0 ^s 37	20 ^s 18 ^s 0 ^s 67	48	22 ^s 84 ^s 1 ^s 03	22 ^s 63 ^s 0 ^s 35	50 ^s 11 ^s 0 ^s 83
28	14 ^s 67 ^s 0 ^s 37	19 ^s 51 ^s 0 ^s 60	48	21 ^s 81 ^s 1 ^s 22	22 ^s 98 ^s 0 ^s 36	49 ^s 28 ^s 0 ^s 78
ov. 7	15 ^s 04 ^s 0 ^s 36	18 ^s 91 ^s 0 ^s 49	48	20 ^s 59 ^s 1 ^s 37	23 ^s 34 ^s 0 ^s 35	48 ^s 50 ^s 0 ^s 71
17	15 ^s 40 ^s 0 ^s 36	18 ^s 42 ^s 0 ^s 36	49	20 ^s 22 ^s 1 ^s 46	23 ^s 69 ^s 0 ^s 34	47 ^s 79 ^s 0 ^s 59
27	15 ^s 74 ^s 0 ^s 36	18 ^s 04 ^s 0 ^s 28	49	19 ^s 51 ^s 1 ^s 51	24 ^s 03 ^s 0 ^s 31	47 ^s 20 ^s 0 ^s 44
ec. 7	16 ^s 06 ^s 0 ^s 36	17 ^s 54 ^s 0 ^s 28	49	19 ^s 22 ^s 0 ^s 24	24 ^s 34 ^s 0 ^s 28	46 ^s 76 ^s 0 ^s 28
17	16 ^s 34 ^s 0 ^s 36	17 ^s 20 ^s 0 ^s 20	49	18 ^s 46 ^s 0 ^s 20	24 ^s 62 ^s 0 ^s 24	46 ^s 48 ^s 0 ^s 10
27	16 ^s 58 ^s 0 ^s 36	16 ^s 46 ^s 0 ^s 20	49	18 ^s 16 ^s 0 ^s 20	24 ^s 86 ^s 0 ^s 20	46 ^s 38 ^s 0 ^s 09
37	16 ^s 58 ^s 0 ^s 36	16 ^s 46 ^s 0 ^s 20	49	18 ^s 16 ^s 0 ^s 20	24 ^s 86 ^s 0 ^s 20	46 ^s 47 ^s 0 ^s 09

APPARENT PLACES OF THE PRINCIPAL FIXED STARS
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	15 Argus.		ε Hydræ.		ε Ursæ Maj.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec.
	^h 8 ^m 0	[°] 23 ['] 50	^h 8 ^m 38	[°] 7 ['] 0	^h 8 ^m 48	[°] 4
Jan. 1	37°10'	8°72'	9°15'	49°84'	2°01'	33°
11	37°25' 0.15	11°55' 2.83	9°35' 0.20	48°49' 1.35	2°31' 0.30	34°
21	37°34' 0.09	14°25' 2.70	9°51' 0.16	47°34' 1.15	2°54' 0.23	35°
31	37°38' 0.04	16°78' 2.53	9°61' 0.10	46°39' 0.95	2°70' 0.16	37°
	0.01	2.30	0.05	0.75	0.09	
Feb. 10	37°37' 0.06	19°08' 2.01	9°66' 0.01	45°64' 0.53	2°79' 0.02	38°
20	37°31' 0.10	21°09' 1.69	9°67' 0.03	45°11' 0.33	2°81' 0.05	40°
Mar. 2	37°21' 0.14	22°78' 1.35	9°64' 0.08	44°78' 0.16	2°76' 0.12	42°
12	37°07' 0.16	24°13' 1.00	9°56' 0.11	44°62' 0.01	2°64' 0.16	44°
22	36°91' 0.18	25°13' 0.63	9°45' 0.12	44°61' 0.13	2°48' 0.20	45°
Apr. 1	36°73' 0.18	25°76' 0.28	9°33' 0.14	44°74' 0.23	2°28' 0.22	47°
11	36°55' 0.19	26°04' 0.08	9°19' 0.14	44°97' 0.32	2°06' 0.23	48°
21	36°36' 0.17	25°96' 0.44	9°05' 0.14	45°29' 0.39	1°83' 0.23	49°
May 1	36°19' 0.15	25°52' 0.78	8°91' 0.13	45°68' 0.44	1°60' 0.21	49°
11	36°04' 0.13	24°74' 1.08	8°78' 0.10	46°12' 0.50	1°39' 0.19	49°
21	35°91' 0.10	23°66' 1.38	8°68' 0.08	46°62' 0.54	1°20' 0.15	49°
31	35°81' 0.07	22°28' 1.64	8°60' 0.06	47°16' 0.57	1°05' 0.12	48°
June 10	35°74' 0.04	20°64' 1.85	8°54' 0.03	47°73' 0.58	0°93' 0.08	47°
20	35°70' 0.00	18°79' 2.01	8°51' 0.01	48°31' 0.58	0°85' 0.03	46°
30	35°70' 0.03	16°78' 2.13	8°52' 0.03	48°89' 0.57	0°82' 0.02	45°
July 10	35°73' 0.07	14°65' 2.19	8°55' 0.06	49°46' 0.53	0°84' 0.06	43°
20	35°80' 0.11	12°46' 2.37	8°61' 0.09	49°99' 0.46	0°90' 0.11	41°
30	35°91' 0.14	10°09' 2.06	8°70' 0.13	50°45' 0.42	1°01' 0.17	39°
Aug. 9	36°05' 0.17	8°03' 1.87	8°83' 0.15	50°87' 0.24	1°18' 0.20	37°
19	36°22' 0.20	6°16' 1.62	8°98' 0.17	51°11' 0.08	1°38' 0.24	35°
29	36°42' 0.22	4°54' 1.29	9°15' 0.20	51°19' 0.10	1°62' 0.28	33°
Sept. 8	36°64' 0.25	3°25' 0.91	9°35' 0.23	51°09' 0.32	1°90' 0.32	31°
18	36°89' 0.28	2°34' 0.47	9°58' 0.25	50°77' 0.55	2°22' 0.35	29°
28	37°17' 0.30	1°87' 0.01	9°83' 0.28	50°22' 0.79	2°57' 0.39	27°
Oct. 8	37°47' 0.31	1°88' 0.51	10°11' 0.29	49°43' 1.01	2°96' 0.42	25°
18	37°78' 0.32	2°39' 0.99	10°40' 0.31	48°42' 1.22	3°38' 0.44	23°
28	38°10' 0.32	3°38' 1.46	10°71' 0.32	47°20' 1.42	3°82' 0.45	22°
Nov. 7	38°42' 0.32	4°84' 1.88	11°03' 0.33	45°78' 1.56	4°27' 0.47	20°
17	38°74' 0.31	6°72' 2.25	11°36' 0.32	44°22' 1.65	4°74' 0.46	19°
27	39°05' 0.28	8°97' 2.54	11°68' 0.31	42°57' 1.67	5°20' 0.45	19°
Dec. 7	39°33' 0.25	11°51' 2.73	11°99' 0.29	40°90' 1.67	5°65' 0.42	18°
17	39°58' 0.22	14°24' 2.85	12°28' 0.27	39°23' 1.59	6°07' 0.38	18°
27	39°80' 0.17	17°09' 2.88	12°55' 0.23	37°64' 1.44	6°45' 0.33	19°
37	39°97' 0.17	19°97' 2.88	12°78' 0.23	36°20' 1.44	6°78' 0.33	20°

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day the month.	α Argus,		α HYDRÆ.		γ Ursæ Majoris.	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. North.
	^h 9	^m 12	^h 9	^m 19	^h 9	^m 21
	^s 18	^s 35	^s 16	^s 57	^s 30	^s 52
n. 1	44° 89'	18° 04'	35° 16'	11° 28'	56° 30'	51° 82'
11	45° 16'	21° 67'	35° 39'	13° 51'	56° 66'	52° 71'
21	45° 34'	25° 44'	35° 57'	15° 61'	56° 95'	53° 98'
31	45° 44'	29° 24'	35° 70'	17° 55'	57° 17'	55° 56'
	0° 02'	3° 72'	0° 09'	1° 75'	0° 14'	1° 82'
b. 10	45° 46'	32° 96'	35° 79'	19° 30'	57° 31'	57° 38'
20	45° 40'	36° 53'	35° 83'	20° 80'	57° 37'	59° 36'
ar. 2	45° 26'	39° 86'	35° 82'	22° 04'	57° 36'	61° 40'
12	45° 06'	42° 87'	35° 77'	23° 04'	57° 28'	63° 41'
	0° 26'	2° 63'	0° 08'	0° 74'	0° 14'	1° 88'
22	44° 80'	45° 50'	35° 69'	23° 78'	57° 14'	65° 29'
pr. 1	44° 50'	47° 72'	35° 58'	24° 27'	56° 95'	66° 96'
11	44° 17'	49° 48'	35° 46'	24° 55'	56° 73'	68° 37'
21	43° 83'	50° 77'	35° 33'	24° 59'	56° 49'	69° 43'
	0° 36'	0° 78'	0° 14'	0° 17'	0° 25'	0° 73'
ay 1	43° 47'	51° 55'	35° 19'	24° 42'	56° 24'	70° 18'
11	43° 10'	51° 81'	35° 06'	24° 05'	56° 00'	70° 52'
21	42° 76'	51° 57'	34° 94'	23° 51'	55° 78'	70° 48'
31	42° 44'	50° 82'	34° 84'	22° 80'	55° 58'	70° 04'
	0° 30'	1° 21'	0° 08'	0° 86'	0° 17'	0° 78'
une 10	42° 14'	49° 61'	34° 76'	21° 94'	55° 41'	69° 26'
20	41° 87'	47° 94'	34° 70'	20° 96'	55° 29'	68° 13'
30	41° 65'	45° 86'	34° 66'	19° 88'	55° 20'	66° 68'
uly 10	41° 48'	43° 45'	34° 65'	18° 73'	55° 16'	64° 96'
	0° 11'	2° 66'	0° 01'	1° 17'	0° 01'	1° 94'
20	41° 37'	40° 79'	34° 66'	17° 56'	55° 17'	63° 02'
30	41° 31'	37° 93'	34° 70'	16° 39'	55° 22'	60° 88'
ug. 9	41° 31'	34° 95'	34° 77'	15° 28'	55° 32'	58° 58'
19	41° 39'	31° 69'	34° 88'	14° 18'	55° 48'	55° 93'
	0° 15'	2° 84'	0° 13'	0° 82'	0° 21'	2° 48'
29	41° 54'	28° 85'	35° 01'	13° 36'	55° 69'	53° 45'
ept. 8	41° 74'	26° 25'	35° 17'	12° 78'	55° 94'	50° 92'
18	42° 01'	23° 96'	35° 35'	12° 45'	56° 23'	48° 42'
28	42° 35'	22° 11'	35° 57'	12° 43'	56° 56'	45° 97'
	0° 39'	1° 34'	0° 25'	0° 31'	0° 38'	2° 34'
oct. 8	42° 74'	20° 77'	35° 82'	12° 74'	56° 94'	43° 42'
18	43° 18'	20° 00'	36° 09'	13° 41'	57° 36'	
28	43° 65'	19° 86'	36° 38'	14° 43'		
ov. 7	44° 14'	20° 38'	36° 69'	15° 80'		
	0° 49'	1° 15'	0° 33'	1° 6'		
17	44° 63'	21° 53'	37° 02'	17° 46'		
27	45° 12'	23° 31'	37° 35'	19° 38'		
Dec. 7	45° 59'	25° 64'	37° 67'	21° 51'		
17	46° 01'	28° 48'	37° 97'	23° 75'		
	0° 37'	3° 24'	0° 28'			
27	46° 38'	31° 72'	38° 25'	26° 00'		
37	46° 69'	35° 25'	38° 51'	28° 00'		

APPARENT PLACES OF THE PRINCIPAL FIXED STARS
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	ϵ Leonis.		α LEONIS. (Regulus)		η Argus	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 9 ^m 36	^o 24 ['] 30	^h 9 ^m 59	^o 12 ['] 45	^h 10 ^m 38	^o 50
Jan. 1	35° 90' ^s	77° 15' ["]	41° 64' ^s	43° 57' ["]	45° 68' ^s	24° 15' ["]
11	36° 17' ^s	76° 49' ["]	41° 91' ^s	42° 20' ["]	46° 09' ^s	28° 15' ["]
21	36° 40' ^s	76° 14' ["]	42° 14' ^s	41° 08' ["]	46° 43' ^s	31° 15' ["]
31	36° 58' ^s	76° 07' ["]	42° 33' ^s	40° 22' ["]	46° 70' ^s	35° 15' ["]
Feb. 10	36° 71' ^s	76° 28' ["]	42° 47' ^s	39° 64' ["]	46° 90' ^s	38° 15' ["]
20	36° 78' ^s	76° 72' ["]	42° 56' ^s	39° 31' ["]	47° 02' ^s	42° 15' ["]
Mar. 2	36° 80' ^s	77° 35' ["]	42° 60' ^s	39° 22' ["]	47° 06' ^s	46° 15' ["]
12	36° 78' ^s	78° 11' ["]	42° 60' ^s	39° 34' ["]	47° 03' ^s	49° 15' ["]
22	36° 71' ^s	78° 96' ["]	42° 56' ^s	39° 62' ["]	46° 93' ^s	53° 15' ["]
Apr. 1	36° 61' ^s	79° 84' ["]	42° 49' ^s	40° 04' ["]	46° 78' ^s	56° 15' ["]
11	36° 49' ^s	80° 70' ["]	42° 39' ^s	40° 54' ["]	46° 58' ^s	58° 15' ["]
21	36° 36' ^s	81° 48' ["]	42° 28' ^s	41° 10' ["]	46° 34' ^s	60° 15' ["]
May 1	36° 22' ^s	82° 17' ["]	42° 16' ^s	41° 67' ["]	46° 07' ^s	62° 15' ["]
11	36° 09' ^s	82° 75' ["]	42° 04' ^s	42° 24' ["]	45° 77' ^s	64° 15' ["]
21	35° 96' ^s	83° 17' ["]	41° 92' ^s	42° 78' ["]	45° 46' ^s	64° 15' ["]
31	35° 85' ^s	83° 45' ["]	41° 82' ^s	43° 28' ["]	45° 15' ^s	65° 15' ["]
June 10	35° 76' ^s	83° 58' ["]	41° 73' ^s	43° 72' ["]	44° 84' ^s	65° 15' ["]
20	35° 69' ^s	83° 54' ["]	41° 66' ^s	44° 07' ["]	44° 54' ^s	64° 15' ["]
30	35° 65' ^s	83° 35' ["]	41° 61' ^s	44° 36' ["]	44° 25' ^s	63° 15' ["]
July 10	35° 63' ^s	83° 02' ["]	41° 58' ^s	44° 57' ["]	43° 99' ^s	61° 15' ["]
20	35° 65' ^s	82° 52' ["]	41° 58' ^s	44° 67' ["]	43° 77' ^s	60° 15' ["]
30	35° 69' ^s	81° 88' ["]	41° 60' ^s	44° 65' ["]	43° 60' ^s	57° 15' ["]
Aug. 9	35° 76' ^s	81° 10' ["]	41° 64' ^s	44° 51' ["]	43° 47' ^s	55° 15' ["]
19	35° 87' ^s	80° 06' ["]	41° 71' ^s	44° 23' ["]	43° 40' ^s	52° 15' ["]
29	36° 01' ^s	78° 97' ["]	41° 82' ^s	43° 73' ["]	43° 39' ^s	49° 15' ["]
Sept. 8	36° 17' ^s	77° 73' ["]	41° 95' ^s	43° 08' ["]	43° 45' ^s	46° 15' ["]
18	36° 37' ^s	76° 34' ["]	42° 11' ^s	42° 23' ["]	43° 59' ^s	44° 15' ["]
28	36° 59' ^s	74° 82' ["]	42° 30' ^s	41° 19' ["]	43° 80' ^s	41° 15' ["]
Oct. 8	36° 85' ^s	73° 20' ["]	42° 52' ^s	39° 93' ["]	44° 08' ^s	39° 15' ["]
18	37° 14' ^s	71° 48' ["]	42° 78' ^s	38° 49' ["]	44° 43' ^s	38° 15' ["]
28	37° 46' ^s	69° 71' ["]	43° 07' ^s	36° 88' ["]	44° 84' ^s	37° 15' ["]
Nov. 7	37° 79' ^s	67° 91' ["]	43° 38' ^s	35° 12' ["]	45° 30' ^s	36° 15' ["]
17	38° 14' ^s	66° 16' ["]	43° 70' ^s	33° 27' ["]	45° 80' ^s	36° 15' ["]
27	38° 50' ^s	64° 49' ["]	44° 04' ^s	31° 36' ["]	46° 32' ^s	36° 15' ["]
Dec. 7	38° 86' ^s	62° 96' ["]	44° 38' ^s	29° 47' ["]	46° 8' ^s	36° 15' ["]
17	39° 21' ^s	61° 63' ["]	44° 72' ^s	27° 66' ["]	47° 3' ^s	36° 15' ["]
27	39° 54' ^s	60° 53' ["]	45° 04' ^s	25° 98' ["]	47° 81' ^s	36° 15' ["]
37	39° 84' ^s	59° 71' ["]	45° 34' ^s	24° 48' ["]	48° 27' ^s	36° 15' ["]

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α URSAE MAJORIS.		δ LEONIS.		δ Hydræ et Crateris.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. South.
	^h 10 ^m 53	[°] 62 ['] 37	^h 11 ^m 5	[°] 21 ['] 24	^h 11 ^m 11	[°] 13 ['] 53
Jan. 1	38° 01' 00"	35° 49' 00"	25° 90' 00"	55° 90' 00"	11° 67' 00"	41° 27' 00"
11	38° 56' 00"	35° 86' 00"	26° 23' 00"	54° 56' 00"	11° 98' 00"	43° 70' 00"
21	39° 06' 00"	36° 80' 00"	26° 53' 00"	53° 57' 00"	12° 25' 00"	46° 11' 00"
31	39° 49' 00"	38° 23' 00"	26° 78' 00"	52° 93' 00"	12° 49' 00"	48° 45' 00"
	0° 35'	1° 86'	0° 21'	0° 29'	0° 20'	2° 20'
Feb. 10	39° 84' 00"	40° 09' 00"	26° 99' 00"	52° 64' 00"	12° 69' 00"	50° 65' 00"
20	40° 09' 00"	42° 29' 00"	27° 16' 00"	52° 67' 00"	12° 84' 00"	52° 66' 00"
Mar. 2	40° 24' 00"	44° 74' 00"	27° 27' 00"	53° 01' 00"	12° 95' 00"	54° 44' 00"
12	40° 30' 00"	47° 33' 00"	27° 33' 00"	53° 61' 00"	13° 01' 00"	56° 00' 00"
	0° 04'	2° 61'	0° 02'	0° 80'	0° 02'	1° 31'
22	40° 26' 00"	49° 94' 00"	27° 35' 00"	54° 41' 00"	13° 03' 00"	57° 31' 00"
Apr. 1	40° 15' 00"	52° 45' 00"	27° 34' 00"	55° 33' 00"	13° 02' 00"	58° 35' 00"
11	39° 96' 00"	54° 78' 00"	27° 29' 00"	56° 35' 00"	12° 98' 00"	59° 16' 00"
21	39° 72' 00"	56° 81' 00"	27° 21' 00"	57° 40' 00"	12° 92' 00"	59° 72' 00"
	0° 28'	1° 70'	0° 09'	1° 00'	0° 08'	0° 35'
May 1	39° 44' 00"	58° 51' 00"	27° 12' 00"	58° 40' 00"	12° 84' 00"	60° 07' 00"
11	39° 12' 00"	59° 79' 00"	27° 02' 00"	59° 34' 00"	12° 74' 00"	60° 18' 00"
21	38° 79' 00"	60° 62' 00"	26° 91' 00"	60° 17' 00"	12° 64' 00"	60° 10' 00"
31	38° 46' 00"	60° 98' 00"	26° 80' 00"	60° 86' 00"	12° 54' 00"	59° 80' 00"
	0° 32'	0° 13'	0° 11'	0° 54'	0° 10'	0° 46'
June 10	38° 14' 00"	60° 85' 00"	26° 69' 00"	61° 40' 00"	12° 44' 00"	59° 34' 00"
20	37° 84' 00"	60° 23' 00"	26° 59' 00"	61° 75' 00"	12° 34' 00"	58° 71' 00"
30	37° 58' 00"	59° 16' 00"	26° 51' 00"	61° 93' 00"	12° 25' 00"	57° 93' 00"
July 10	37° 35' 00"	57° 65' 00"	26° 43' 00"	61° 91' 00"	12° 17' 00"	57° 03' 00"
	0° 19'	1° 90'	0° 06'	0° 22'	0° 07'	0° 98'
20	37° 16' 00"	55° 75' 00"	26° 37' 00"	61° 69' 00"	12° 10' 00"	56° 05' 00"
30	37° 03' 00"	53° 48' 00"	26° 33' 00"	61° 28' 00"	12° 05' 00"	55° 00' 00"
Aug. 9	36° 95' 00"	50° 89' 00"	26° 32' 00"	60° 66' 00"	12° 01' 00"	53° 94' 00"
19	36° 92' 00"	48° 03' 00"	26° 32' 00"	59° 83' 00"	12° 00' 00"	52° 90' 00"
	0° 03'	3° 06'	0° 03'	1° 03'	0° 02'	0° 95'
29	36° 95' 00"	44° 97' 00"	26° 35' 00"	58° 80' 00"	12° 02' 00"	51° 95' 00"
Sept. 8	37° 06' 00"	41° 42' 00"	26° 42' 00"	57° 43' 00"	12° 07' 00"	51° 13' 00"
18	37° 23' 00"	38° 09' 00"	26° 52' 00"	55° 96' 00"	12° 15' 00"	50° 44' 00"
28	37° 47' 00"	34° 73' 00"	26° 65' 00"	54° 29' 00"	12° 27' 00"	50° 07' 00"
	0° 31'	3° 32'	0° 17'	1° 86'	0° 16'	0° 06'
Oct. 8	37° 78' 00"	31° 41' 00"	26° 82' 00"	52° 43' 00"	12° 43' 00"	50° 01' 00"
18	38° 15' 00"	28° 18' 00"	27° 03' 00"	50° 41' 00"	12° 63' 00"	50° 25' 00"
28	38° 58' 00"	25° 14' 00"	27° 28' 00"	48° 27' 00"	12° 86' 00"	50° 86' 00"
Nov. 7	39° 00' 00"	22° 38' 00"	27° 56' 00"	46° 05' 00"	13° 13' 00"	51° 83' 00"
	0° 45'	2° 45'	0° 31'	2° 27'	0° 30'	1° 33'
17	39° 00' 00"	20° 00' 00"	27° 57' 00"	43° 78' 00"	13° 43' 00"	53° 16' 00"
	0° 34'	1° 21'	0° 34'	41° 53' 00"	13° 76' 00"	54° 82' 00"
	0° 35'	0° 36'	0° 35'	39° 38' 00"	14° 10' 00"	56° 75' 00"
	0° 36'	0° 35'	0° 36'	37° 39' 00"	14° 44' 00"	58° 93' 00"
	0° 35'	0° 35'	0° 35'	35° 61' 00"	14° 78' 00"	61° 26' 00"
	0° 35'	0° 35'	0° 35'	34° 11' 00"	15° 10' 00"	63° 70' 00"

APPARENT PLACES OF THE PRINCIPAL FIXED STARS
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	β LEONIS.		γ URSE MAJORIS.		β Chamæleon	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec.
	^h 11 ^m 40	^o 15 ['] 28	^h 11 ^m 45	^o 54 ['] 35	^h 12 ^m 8	78
Jan. 1	44°40' 0.33	58°75' 1.71	13°96' 0.49	52°06' 0.53	55°03' 1.14	27
11	44°73' 0.31	57°04' 1.41	14°45' 0.46	51°53' 0.05	56°17' 1.05	47
21	45°04' 0.27	55°63' 1.10	14°91' 0.41	51°58' 0.60	57°22' 0.94	77
31	45°31' 0.23	54°53' 0.74	15°32' 0.35	52°18' 1.13	58°16' 0.80	107
Feb. 10	45°54' 0.19	53°79' 0.42	15°67' 0.29	53°31' 1.57	58°96' 0.64	137
20	45°73' 0.15	53°37' 0.08	15°96' 0.21	54°88' 1.94	59°60' 0.48	167
Mar. 2	45°88' 0.10	53°29' 0.20	16°17' 0.14	56°82' 2.24	60°08' 0.31	207
12	45°98' 0.05	53°49' 0.45	16°31' 0.07	59°06' 2.43	60°39' 0.15	247
22	46°03' 0.02	53°94' 0.65	16°38' 0.00	61°49' 2.46	60°54' 0.01	287
Apr. 1	46°05' 0.01	54°59' 0.78	16°38' 0.07	63°95' 2.41	60°53' 0.17	327
11	46°04' 0.04	55°37' 0.89	16°31' 0.11	66°36' 2.29	60°36' 0.32	357
21	46°00' 0.07	56°26' 0.91	16°20' 0.16	68°65' 2.07	60°04' 0.45	397
May 1	45°93' 0.08	57°17' 0.91	16°04' 0.20	70°72' 1.77	59°59' 0.57	427
11	45°85' 0.09	58°08' 0.86	15°84' 0.22	72°49' 1.40	59°02' 0.68	457
21	45°76' 0.09	58°94' 0.78	15°62' 0.23	73°89' 1.01	58°34' 0.77	477
31	45°67' 0.10	59°72' 0.68	15°39' 0.24	74°90' 0.58	57°57' 0.84	497
June 10	45°57' 0.10	60°40' 0.55	15°15' 0.23	75°48' 0.12	56°73' 0.90	517
20	45°47' 0.09	60°95' 0.41	14°92' 0.23	75°60' 0.33	55°83' 0.92	527
30	45°38' 0.09	61°36' 0.24	14°69' 0.21	75°27' 0.78	54°91' 0.92	527
July 10	45°29' 0.08	61°60' 0.08	14°48' 0.18	74°49' 1.20	53°99' 0.90	527
20	45°21' 0.06	61°68' 0.09	14°30' 0.16	73°29' 1.61	53°09' 0.85	517
30	45°15' 0.04	61°59' 0.29	14°14' 0.13	71°68' 1.99	52°24' 0.77	507
Aug. 9	45°11' 0.03	61°30' 0.49	14°01' 0.10	69°69' 2.33	51°47' 0.65	487
19	45°08' 0.01	60°81' 0.69	13°91' 0.05	67°36' 2.63	50°82' 0.52	467
29	45°07' 0.03	60°12' 0.90	13°86' 0.01	64°73' 2.90	50°30' 0.36	447
Sept. 8	45°10' 0.05	59°22' 1.26	13°85' 0.06	61°83' 3.40	49°94' 0.17	417
18	45°15' 0.10	57°96' 1.38	13°91' 0.10	58°43' 3.27	49°77' 0.03	387
28	45°25' 0.13	56°58' 1.59	14°01' 0.16	55°16' 3.37	49°80' 0.24	357
Oct. 8	45°38' 0.16	54°99' 1.82	14°17' 0.23	51°79' 3.38	50°04' 0.45	327
18	45°54' 0.21	53°17' 2.00	14°40' 0.28	48°41' 3.32	50°49' 0.64	297
28	45°75' 0.25	51°17' 2.15	14°68' 0.34	45°09' 3.21	51°13' 0.82	277
Nov. 7	46°00' 0.28	49°02' 2.25	15°02' 0.39	41°88' 3.98	51°05' 0.98	257
17	46°28' 0.32	46°77' 2.30	15°41' 0.44	38°90' 4.26	51°05' 1.08	237
27	46°60' 0.33	44°47' 2.30	15°85' 0.48			
Dec. 7	46°93' 0.35	42°17' 2.21	16°33' 0.50			
17	47°28' 0.34	39°96' 2.07	16°83' 0.51			
27	47°62' 0.35	37°89' 1.85	17°34' 0.50			
37	47°97' 0.35	36°04' 1.85	17°84' 0.50			

FIXED STARS, 1837.

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APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α^1 Crucis.		β Corvi.		12 Canum Venaticorum.	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. North.
	^h 12 ^m 17	[°] 62 ['] 11	^h 12 ^m 25	[°] 22 ['] 29	^h 12 ^m 48	[°] 39 ['] 11
Jan. 1	34°34' 0.56	19°38' 2.08	49°62' 0.35	26°81' 2.29	23°56' 0.40	49°28' 1.62
11	34°40' 0.53	21°46' 2.54	49°97' 0.33	29°10' 2.39	23°96' 0.38	47°66' 1.11
21	35°43' 0.47	24°00' 2.93	50°30' 0.30	31°49' 2.44	24°34' 0.36	46°55' 0.56
31	35°50' 0.41	26°93' 3.23	50°60' 0.26	33°93' 2.40	24°70' 0.34	45°99' 0.05
Feb. 10	36°31' 0.35	30°16' 3.43	50°86' 0.23	36°33' 2.32	25°04' 0.29	45°94' 0.46
20	36°66' 0.27	33°59' 3.55	51°09' 0.19	38°65' 2.20	25°33' 0.24	46°40' 0.94
Mar. 2	36°93' 0.19	37°14' 3.59	51°28' 0.14	40°85' 2.02	25°57' 0.19	47°34' 1.33
12	37°12' 0.13	40°73' 3.55	51°42' 0.11	42°87' 1.82	25°76' 0.14	48°67' 1.67
22	37°25' 0.05	44°28' 3.43	51°53' 0.07	44°69' 1.61	25°90' 0.10	50°34' 1.90
Apr. 1	37°30' 0.01	47°71' 3.27	51°60' 0.03	46°30' 1.39	26°00' 0.04	52°24' 2.05
11	37°29' 0.08	50°98' 3.02	51°63' 0.00	47°69' 1.14	26°04' 0.01	54°29' 2.12
21	37°21' 0.13	54°00' 2.73	51°63' 0.02	48°83' 0.91	26°03' 0.03	56°41' 2.07
May 1	37°08' 0.18	56°73' 2.39	51°61' 0.04	49°74' 0.69	26°00' 0.07	58°48' 1.97
11	36°50' 0.22	59°12' 2.00	51°57' 0.06	50°43' 0.45	25°93' 0.09	60°45' 1.77
21	36°68' 0.26	61°12' 1.58	51°51' 0.08	50°88' 0.22	25°84' 0.12	62°22' 1.54
31	36°42' 0.29	62°70' 1.11	51°43' 0.09	51°10' 0.00	25°72' 0.13	63°76' 1.23
June 10	36°13' 0.31	63°81' 0.65	51°34' 0.10	51°10' 0.21	25°59' 0.15	64°99' 0.89
20	35°82' 0.33	64°46' 0.16	51°24' 0.11	50°89' 0.42	25°44' 0.15	65°88' 0.56
30	35°49' 0.33	64°62' 0.34	51°13' 0.11	50°47' 0.62	25°29' 0.15	66°44' 0.17
July 10	35°16' 0.32	64°28' 0.83	51°02' 0.10	49°85' 0.79	25°14' 0.15	66°61' 0.21
20	34°84' 0.31	63°45' 1.26	50°92' 0.10	49°06' 0.93	24°99' 0.15	66°40' 0.59
30	34°53' 0.29	62°19' 1.66	50°82' 0.10	48°13' 1.06	24°84' 0.14	65°81' 0.97
Aug. 9	34°24' 0.24	60°53' 2.03	50°72' 0.08	47°07' 1.12	24°70' 0.12	64°84' 1.33
19	34°00' 0.18	58°50' 2.31	50°64' 0.06	45°95' 1.15	24°58' 0.10	63°51' 1.68
29	33°82' 0.13	56°19' 2.52	50°58' 0.03	44°80' 1.09	24°48' 0.07	61°83' 2.03
Sept. 8	33°69' 0.05	53°67' 2.63	50°55' 0.00	43°71' 1.04	24°41' 0.04	59°80' 2.31
18	33°64' 0.03	51°04' 2.88	50°55' 0.05	42°67' 0.98	24°37' 0.01	57°49' 2.57
28	33°67' 0.13	48°16' 2.50	50°60' 0.09	41°69' 0.63	24°38' 0.05	54°92' 3.11
Oct. 8	33°80' 0.22	45°66' 2.27	50°69' 0.13	41°06' 0.35	24°43' 0.10	51°81' 3.01
18	34°02' 0.30	43°39' 1.94	50°82' 0.18	40°71' 0.08	24°53' 0.15	48°80' 3.13
28	34°32' 0.39	41°45' 1.52	51°00' 0.22	40°63' 0.29	24°68' 0.20	45°67' 3.19
Nov. 7	34°71' 0.46	39°93' 1.03	51°22' 0.27	40°92' 0.68	24°88' 0.26	42°48' 3.18
	35°17' 0.52	38°90' 0.47	51°49' 0.31	41°60' 1.03	25°14' 0.30	39°30' 3.08
	35°69' 0.57	38°43' 0.12	51°80' 0.33	42°63' 1.40	25°44' 0.34	36°22' 2.89
	35°59' 0.59	38°55' 0.72	52°13' 0.35	44°03' 1.72	25°78' 0.37	33°33' 2.62
		39°27' 1.31	52°48' 0.36	45°75' 2.00	26°15' 0.40	30°71' 2.27
		58°1.83	52°84' 0.36	47°75' 2.21	26°55' 0.40	28°44' 1.86
			53°20'	49°96'	26°95'	26°58'

APPARENT PLACES OF THE PRINCIPAL FIXED STARS
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α VIRGINIS. (Spica)		η URSE MAJORIS.		η Bootis.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec.
	^h 13 ^m 16	^o 10 ['] 18	^h 13 ^m 41	^o 50 ['] 7	^h 13 ^m 46	^o 19
Jan. 1	36° 01' ^s	24° 17' ["]	5° 95' ^s	30° 16' ["]	54° 76' ^s	59° ["]
11	36° 36' 0° 35	26° 26' 2° 09	6° 39' 0° 44	28° 23' 1° 93	55° 10' 0° 34	57° ["]
21	36° 70' 0° 34	28° 35' 2° 09	6° 84' 0° 45	26° 86' 1° 37	55° 44' 0° 34	55° ["]
31	37° 01' 0° 31	30° 38' 2° 03	7° 27' 0° 43	26° 08' 0° 78	55° 77' 0° 33	53° ["]
		0° 29		0° 42		0° 32
Feb. 10	37° 30' 0° 29	32° 27' 1° 89	7° 69' 0° 42	25° 92' 0° 16	56° 09' 0° 32	52° ["]
20	37° 56' 0° 26	34° 00' 1° 73	8° 07' 0° 38	26° 37' 0° 45	56° 38' 0° 29	52° ["]
Mar. 2	37° 79' 0° 23	35° 53' 1° 53	8° 40' 0° 33	27° 39' 1° 02	56° 63' 0° 25	51° ["]
12	37° 98' 0° 19	36° 83' 1° 30	8° 68' 0° 28	28° 89' 1° 50	56° 85' 0° 22	52° ["]
		0° 15		0° 22		0° 19
22	38° 13' 0° 15	37° 91' 1° 08	8° 90' 0° 22	30° 82' 1° 93	57° 04' 0° 19	52° ["]
Apr. 1	38° 25' 0° 12	38° 76' 0° 85	9° 07' 0° 17	33° 07' 2° 25	57° 18' 0° 14	53° ["]
11	38° 34' 0° 09	39° 39' 0° 63	9° 18' 0° 11	35° 54' 2° 47	57° 29' 0° 11	54° ["]
21	38° 40' 0° 06	39° 83' 0° 44	9° 24' 0° 06	38° 16' 2° 62	57° 37' 0° 08	55° ["]
		0° 03		0° 00		0° 05
May 1	38° 43' 0° 03	40° 08' 0° 25	9° 24' 0° 00	40° 77' 2° 61	57° 42' 0° 05	57° ["]
11	38° 43' 0° 00	40° 18' 0° 10	9° 19' 0° 05	43° 29' 2° 52	57° 43' 0° 01	58° ["]
21	38° 41' 0° 02	40° 14' 0° 04	9° 10' 0° 09	45° 65' 2° 36	57° 42' 0° 01	60° ["]
31	38° 38' 0° 03	39° 97' 0° 17	9° 10' 0° 12	45° 65' 2° 11	57° 42' 0° 03	60° ["]
		0° 06		0° 16		0° 06
June 10	38° 32' 0° 06	39° 71' 0° 26	8° 82' 0° 16	49° 53' 1° 77	57° 33' 0° 06	62° ["]
20	38° 25' 0° 07	39° 35' 0° 36	8° 63' 0° 19	50° 94' 1° 41	57° 26' 0° 07	64° ["]
30	38° 17' 0° 08	38° 92' 0° 43	8° 43' 0° 20	51° 92' 0° 98	57° 16' 0° 10	64° ["]
July 10	38° 07' 0° 10	38° 42' 0° 50	8° 21' 0° 22	52° 49' 0° 57	57° 06' 0° 10	65° ["]
		0° 10		0° 23		0° 12
20	37° 97' 0° 10	37° 89' 0° 57	7° 98' 0° 24	52° 56' 0° 37	56° 94' 0° 12	66° ["]
30	37° 87' 0° 10	37° 32' 0° 58	7° 74' 0° 23	52° 19' 0° 81	56° 82' 0° 12	66° ["]
Aug. 9	37° 77' 0° 10	36° 74' 0° 57	7° 51' 0° 22	51° 38' 1° 28	56° 70' 0° 13	66° ["]
19	37° 67' 0° 09	36° 17' 0° 51	7° 29' 0° 20	50° 10' 1° 70	56° 57' 0° 11	66° ["]
		0° 06		0° 17		0° 09
29	37° 58' 0° 06	35° 66' 0° 42	7° 09' 0° 17	48° 40' 2° 12	56° 46' 0° 09	65° ["]
Sept. 8	37° 52' 0° 04	35° 24' 0° 32	6° 92' 0° 14	46° 28' 2° 49	56° 37' 0° 08	64° ["]
18	37° 48' 0° 01	34° 92' 0° 18	6° 78' 0° 10	43° 79' 2° 82	56° 29' 0° 05	63° ["]
28	37° 47' 0° 03	34° 74' 0° 04	6° 68' 0° 05	40° 97' 3° 11	56° 24' 0° 01	62° ["]
		0° 08		0° 00		0° 03
Oct. 8	37° 50' 0° 08	34° 78' 0° 30	6° 63' 0° 00	37° 86' 3° 69	56° 23' 0° 03	60° ["]
18	37° 58' 0° 12	35° 08' 0° 54	6° 63' 0° 08	34° 17' 3° 53	56° 26' 0° 09	58° ["]
28	37° 70' 0° 17	35° 62' 0° 83	6° 71' 0° 15	30° 64' 3° 62	56° 35' 0° 12	55° ["]
Nov. 7	37° 87' 0° 22	36° 45' 1° 12	6° 86' 0° 19	27° 02' 3° 59	56° 47' 0° 18	53° ["]
		0° 25		0° 26		0° 20
17	38° 09' 0° 25	37° 57' 1° 37	7° 05' 0° 26	23° 43' 3° 52	56° 65' 0° 20	50° ["]
Dec. 7	38° 34' 0° 29	38° 94' 1° 62	7° 31' 0° 33	19° 91' 3° 35	56° 87' 0° 17	47° ["]
17	38° 63' 0° 32	40° 56' 1° 84	7° 64' 0° 37	16° 56' 3° 05	57° 14' 0° 17	44° ["]
		0° 34		0° 41		0° 17
27	39° 29' 0° 34	44° 38' 2° 07	8° 42' 0° 43	10° 84' 2° 20	57° 76' 0° 17	41° ["]
37	39° 63' 0° 34	46° 45' 2° 07	8° 85' 0° 43	8° 64' 2° 20	58° 10' 0° 17	38° ["]

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	β Centauri.		α Bootis. (Arcturus)		α^3 Centauri.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. South.
	^h 13 ^m 52	^o 59 ⁱ 34	^h 14 ^m 8	^o 20 ⁱ 1	^h 14 ^m 28	^o 60 ⁱ 9
n. 1	21 ^s 20 ^s	38 ^s 75 ^s	12 ^s 84 ^s	56 ^s 13 ^s	33 ^s 11 ^s	6 ^s 86 ^s
11	21 ^s 77 ^s 0 ^s 57	39 ^s 68 ^s 0 ^s 93	13 ^s 18 ^s 0 ^s 34	53 ^s 85 ^s 2 ^s 28	33 ^s 68 ^s 0 ^s 57	7 ^s 28 ^s 0 ^s 42
21	22 ^s 34 ^s 0 ^s 57	41 ^s 09 ^s 1 ^s 41	13 ^s 51 ^s 0 ^s 33	51 ^s 84 ^s 2 ^s 01	34 ^s 25 ^s 0 ^s 57	8 ^s 16 ^s 0 ^s 88
31	22 ^s 89 ^s 0 ^s 55	42 ^s 92 ^s 1 ^s 83	13 ^s 85 ^s 0 ^s 34	50 ^s 18 ^s 1 ^s 66	34 ^s 81 ^s 0 ^s 56	9 ^s 48 ^s 1 ^s 32
	0 ^s 52	2 ^s 21	0 ^s 32	1 ^s 23	0 ^s 55	1 ^s 72
ab. 10	23 ^s 41 ^s 0 ^s 47	45 ^s 13 ^s 2 ^s 53	14 ^s 17 ^s 0 ^s 29	48 ^s 95 ^s 0 ^s 79	35 ^s 36 ^s 0 ^s 52	11 ^s 20 ^s 2 ^s 05
20	23 ^s 88 ^s 0 ^s 43	47 ^s 66 ^s 2 ^s 76	14 ^s 46 ^s 0 ^s 27	48 ^s 16 ^s 0 ^s 33	35 ^s 88 ^s 0 ^s 47	13 ^s 25 ^s 2 ^s 34
ar. 2	24 ^s 31 ^s 0 ^s 38	50 ^s 42 ^s 2 ^s 94	14 ^s 73 ^s 0 ^s 23	47 ^s 83 ^s 0 ^s 09	36 ^s 35 ^s 0 ^s 43	15 ^s 59 ^s 2 ^s 58
12	24 ^s 69 ^s 0 ^s 32	53 ^s 36 ^s 3 ^s 05	14 ^s 96 ^s 0 ^s 20	47 ^s 92 ^s 0 ^s 46	36 ^s 78 ^s 0 ^s 38	18 ^s 17 ^s 2 ^s 75
	0 ^s 26	3 ^s 09	0 ^s 17	0 ^s 83	0 ^s 32	2 ^s 83
pr. 1	25 ^s 27 ^s 0 ^s 20	59 ^s 50 ^s 3 ^s 09	15 ^s 33 ^s 0 ^s 13	49 ^s 21 ^s 1 ^s 11	37 ^s 48 ^s 0 ^s 27	23 ^s 75 ^s 2 ^s 90
11	25 ^s 47 ^s 0 ^s 14	62 ^s 59 ^s 3 ^s 01	15 ^s 46 ^s 0 ^s 10	50 ^s 32 ^s 1 ^s 31	37 ^s 75 ^s 0 ^s 20	26 ^s 65 ^s 2 ^s 88
21	25 ^s 61 ^s 0 ^s 08	65 ^s 60 ^s 2 ^s 87	15 ^s 56 ^s 0 ^s 06	51 ^s 63 ^s 1 ^s 46	37 ^s 95 ^s 0 ^s 15	29 ^s 53 ^s 2 ^s 82
	0 ^s 03	2 ^s 69	0 ^s 03	1 ^s 52	0 ^s 08	2 ^s 73
ay 1	25 ^s 69 ^s 0 ^s 04	68 ^s 47 ^s 2 ^s 48	15 ^s 62 ^s 0 ^s 01	53 ^s 09 ^s 1 ^s 54	38 ^s 10 ^s 0 ^s 03	32 ^s 35 ^s 2 ^s 55
11	25 ^s 72 ^s 0 ^s 08	71 ^s 16 ^s 2 ^s 18	15 ^s 65 ^s 0 ^s 02	54 ^s 61 ^s 1 ^s 47	38 ^s 18 ^s 0 ^s 03	35 ^s 08 ^s 2 ^s 33
21	25 ^s 68 ^s 0 ^s 13	73 ^s 64 ^s 1 ^s 87	15 ^s 66 ^s 0 ^s 05	56 ^s 15 ^s 1 ^s 37	38 ^s 21 ^s 0 ^s 09	37 ^s 63 ^s 2 ^s 08
31	25 ^s 60 ^s 0 ^s 18	75 ^s 82 ^s 1 ^s 50	15 ^s 64 ^s 0 ^s 07	57 ^s 62 ^s 1 ^s 21	38 ^s 18 ^s 0 ^s 14	39 ^s 96 ^s 1 ^s 76
	0 ^s 23	1 ^s 11	0 ^s 08	1 ^s 02	0 ^s 25	1 ^s 42
ine 10	25 ^s 47 ^s 0 ^s 25	77 ^s 69 ^s 0 ^s 68	15 ^s 59 ^s 0 ^s 11	58 ^s 99 ^s 0 ^s 55	38 ^s 09 ^s 0 ^s 28	42 ^s 04 ^s 0 ^s 62
20	25 ^s 29 ^s 0 ^s 28	79 ^s 19 ^s 0 ^s 21	15 ^s 52 ^s 0 ^s 13	60 ^s 20 ^s 0 ^s 28	37 ^s 95 ^s 0 ^s 31	43 ^s 80 ^s 0 ^s 18
30	25 ^s 06 ^s 0 ^s 30	80 ^s 30 ^s 0 ^s 64	15 ^s 44 ^s 0 ^s 13	61 ^s 22 ^s 0 ^s 01	37 ^s 75 ^s 0 ^s 32	45 ^s 22 ^s 0 ^s 25
uly 10	24 ^s 81 ^s 0 ^s 27	80 ^s 98 ^s 1 ^s 07	15 ^s 33 ^s 0 ^s 13	62 ^s 02 ^s 0 ^s 26	37 ^s 50 ^s 0 ^s 32	46 ^s 26 ^s 1 ^s 10
	0 ^s 28	0 ^s 25	0 ^s 12	0 ^s 55	0 ^s 28	0 ^s 62
20	24 ^s 53 ^s 0 ^s 30	81 ^s 23 ^s 0 ^s 21	15 ^s 21 ^s 0 ^s 13	62 ^s 57 ^s 0 ^s 28	37 ^s 22 ^s 0 ^s 31	46 ^s 88 ^s 0 ^s 18
30	24 ^s 23 ^s 0 ^s 30	81 ^s 02 ^s 0 ^s 64	15 ^s 08 ^s 0 ^s 13	62 ^s 85 ^s 0 ^s 01	36 ^s 91 ^s 0 ^s 32	47 ^s 06 ^s 0 ^s 25
ug. 9	23 ^s 93 ^s 0 ^s 27	80 ^s 38 ^s 1 ^s 45	14 ^s 95 ^s 0 ^s 13	62 ^s 86 ^s 0 ^s 58	36 ^s 59 ^s 0 ^s 32	46 ^s 81 ^s 1 ^s 10
19	23 ^s 63 ^s 0 ^s 24	79 ^s 31 ^s 1 ^s 78	14 ^s 81 ^s 0 ^s 12	62 ^s 60 ^s 0 ^s 86	36 ^s 26 ^s 0 ^s 29	46 ^s 11 ^s 1 ^s 48
	0 ^s 19	2 ^s 05	0 ^s 07	1 ^s 17	0 ^s 25	1 ^s 81
29	23 ^s 36 ^s 0 ^s 13	77 ^s 86 ^s 2 ^s 35	14 ^s 47 ^s 0 ^s 07	59 ^s 99 ^s 1 ^s 74	35 ^s 40 ^s 0 ^s 20	41 ^s 72 ^s 2 ^s 07
pt. 8	23 ^s 12 ^s 0 ^s 05	76 ^s 08 ^s 2 ^s 35	14 ^s 40 ^s 0 ^s 04	58 ^s 53 ^s 1 ^s 01	35 ^s 20 ^s 0 ^s 13	39 ^s 65 ^s 2 ^s 23
18	22 ^s 93 ^s 0 ^s 24	74 ^s 03 ^s 2 ^s 84	14 ^s 56 ^s 0 ^s 01	61 ^s 16 ^s 2 ^s 01	35 ^s 65 ^s 0 ^s 05	43 ^s 53 ^s 2 ^s 31
28	22 ^s 80 ^s 0 ^s 19	71 ^s 78 ^s 2 ^s 01	14 ^s 37 ^s 0 ^s 05	54 ^s 78 ^s 2 ^s 51	35 ^s 02 ^s 0 ^s 04	35 ^s 11 ^s 2 ^s 34
	0 ^s 13	2 ^s 25	0 ^s 10	2 ^s 48	0 ^s 14	2 ^s 38
ov. 7	22 ^s 75 ^s 0 ^s 16	69 ^s 43 ^s 1 ^s 70	14 ^s 42 ^s 0 ^s 16	52 ^s 27 ^s 2 ^s 65	35 ^s 06 ^s 0 ^s 24	32 ^s 77 ^s 1 ^s 96
	0 ^s 16	1 ^s 70	0 ^s 16	2 ^s 65	0 ^s 24	1 ^s 96
17	22 ^s 70 ^s 0 ^s 20	67 ^s 09 ^s 0 ^s 20	14 ^s 36 ^s 0 ^s 20	47 ^s 14 ^s 2 ^s 79	35 ^s 44 ^s 0 ^s 32	28 ^s 46 ^s 1 ^s 62
	0 ^s 20	0 ^s 20	0 ^s 20	2 ^s 79	0 ^s 32	1 ^s 62
	0 ^s 24	0 ^s 24	0 ^s 24	2 ^s 81	0 ^s 40	1 ^s 24
	0 ^s 28	0 ^s 28	0 ^s 28	2 ^s 83	0 ^s 47	0 ^s 81
	0 ^s 32	0 ^s 32	0 ^s 32	2 ^s 85	0 ^s 52	0 ^s 84
	0 ^s 36	0 ^s 36	0 ^s 36	2 ^s 87	0 ^s 57	0 ^s 88
	0 ^s 40	0 ^s 40	0 ^s 40	2 ^s 89	0 ^s 62	0 ^s 92
	0 ^s 44	0 ^s 44	0 ^s 44	2 ^s 91	0 ^s 67	0 ^s 96
	0 ^s 48	0 ^s 48	0 ^s 48	2 ^s 93	0 ^s 72	0 ^s 100
	0 ^s 52	0 ^s 52	0 ^s 52	2 ^s 95	0 ^s 77	0 ^s 104
	0 ^s 56	0 ^s 56	0 ^s 56	2 ^s 97	0 ^s 82	0 ^s 108
	0 ^s 60	0 ^s 60	0 ^s 60	2 ^s 99	0 ^s 87	0 ^s 112
	0 ^s 64	0 ^s 64	0 ^s 64	3 ^s 01	0 ^s 92	0 ^s 116
	0 ^s 68	0 ^s 68	0 ^s 68	3 ^s 03	0 ^s 97	0 ^s 120
	0 ^s 72	0 ^s 72	0 ^s 72	3 ^s 05	0 ^s 102	0 ^s 124
	0 ^s 76	0 ^s 76	0 ^s 76	3 ^s 07	0 ^s 107	0 ^s 128
	0 ^s 80	0 ^s 80	0 ^s 80	3 ^s 09	0 ^s 112	0 ^s 132
	0 ^s 84	0 ^s 84	0 ^s 84	3 ^s 11	0 ^s 117	0 ^s 136
	0 ^s 88	0 ^s 88	0 ^s 88	3 ^s 13	0 ^s 122	0 ^s 140
	0 ^s 92	0 ^s 92	0 ^s 92	3 ^s 15	0 ^s 127	0 ^s 144
	0 ^s 96	0 ^s 96	0 ^s 96	3 ^s 17	0 ^s 132	0 ^s 148
	0 ^s 100	0 ^s 100	0 ^s 100	3 ^s 19	0 ^s 137	0 ^s 152
	0 ^s 104	0 ^s 104	0 ^s 104	3 ^s 21	0 ^s 142	0 ^s 156
	0 ^s 108	0 ^s 108	0 ^s 108	3 ^s 23	0 ^s 147	0 ^s 160
	0 ^s 112	0 ^s 112	0 ^s 112	3 ^s 25	0 ^s 152	0 ^s 164
	0 ^s 116	0 ^s 116	0 ^s 116	3 ^s 27	0 ^s 157	0 ^s 168
	0 ^s 120	0 ^s 120	0 ^s 120	3 ^s 29	0 ^s 162	0 ^s 172
	0 ^s 124	0 ^s 124	0 ^s 124	3 ^s 31	0 ^s 167	0 ^s 176
	0 ^s 128	0 ^s 128	0 ^s 128	3 ^s 33	0 ^s 172	0 ^s 180
	0 ^s 132	0 ^s 132	0 ^s 132	3 ^s 35	0 ^s 177	0 ^s 184
	0 ^s 136	0 ^s 136	0 ^s 136	3 ^s 37	0 ^s 182	0 ^s 188
	0 ^s 140	0 ^s 140	0 ^s 140	3 ^s 39	0 ^s 187	0 ^s 192
	0 ^s 144	0 ^s 144	0 ^s 144	3 ^s 41	0 ^s 192	0 ^s 196
	0 ^s 148	0 ^s 148	0 ^s 148	3 ^s 43	0 ^s 197	0 ^s 200
	0 ^s 152	0 ^s 152	0 ^s 152	3 ^s 45	0 ^s 202	0 ^s 204
	0 ^s 156	0 ^s 156	0 ^s 156	3 ^s 47	0 ^s 207	0 ^s 208
	0 ^s 160	0 ^s 160	0 ^s 160	3 ^s 49	0 ^s 212	0 ^s 212
	0 ^s 164	0 ^s 164	0 ^s 164	3 ^s 51	0 ^s 217	0 ^s 216
	0 ^s 168	0 ^s 168	0 ^s 168	3 ^s 53	0 ^s 222	0 ^s 220
	0 ^s 172	0 ^s 172	0 ^s 172	3 ^s 55	0 ^s 227	0 ^s 224
	0 ^s 176	0 ^s 176	0 ^s 176	3 ^s 57	0 ^s 232	0 ^s 228
	0 ^s 180	0 ^s 180	0 ^s 180	3 ^s 59	0 ^s 237	0 ^s 232
	0 ^s 184	0 ^s 184	0 ^s 184	3 ^s 61	0 ^s 242	0 ^s 236
	0 ^s 188	0 ^s 188	0 ^s 188	3 ^s 63	0 ^s 247	0 ^s 240
	0 ^s 192	0 ^s 192	0 ^s 192	3 ^s 65	0 ^s 252	0 ^s 244
	0 ^s 196	0 ^s 196	0 ^s 196	3 ^s 67	0 ^s 257	0 ^s 248
	0 ^s 200	0 ^s 200	0 ^s 200	3 ^s 69	0 ^s 262	0 ^s 252
	0 ^s 204	0 ^s 204	0 ^s 204	3 ^s 71	0 ^s 267	0 ^s 256
	0 ^s 208	0 ^s 208	0 ^s 208	3 ^s 73	0 ^s 272	0 ^s 260
	0 ^s 212	0 ^s				

APPARENT PLACES OF THE PRINCIPAL FIXED STARS
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	ϵ BOOTIS.		α^2 LIBRÆ.		β URSÆ MINOR.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec.
	^h 14 ^m 37	^o 27 ⁱ 45	^h 14 ^m 41	^o 15 ⁱ 21	^h 14 ^m 51	^o 74
Jan. 1	51° 08' 0.33	44° 05' 2.45	51° 09' 0.33	30° 89' 1.67	14° 05' 0.79	59° 4'
11	51° 41' 0.35	41° 60' 2.08	51° 42' 0.34	32° 56' 1.71	14° 84' 0.85	57° 1'
21	51° 76' 0.34	39° 52' 1.66	51° 76' 0.34	34° 27' 1.73	15° 69' 0.90	55° 3'
31	52° 10' 0.34	37° 86' 1.17	52° 10' 0.33	36° 00' 1.68	16° 59' 0.91	54° 7'
Feb. 10	52° 44' 0.32	36° 69' 0.67	52° 43' 0.31	37° 68' 1.58	17° 50' 0.88	53° 7'
20	52° 76' 0.30	36° 02' 0.15	52° 74' 0.29	39° 26' 1.45	18° 38' 0.83	54° 7'
Mar. 2	53° 06' 0.27	35° 87' 0.34	53° 03' 0.27	40° 71' 1.30	19° 21' 0.75	54° 7'
12	53° 33' 0.24	36° 21' 0.78	53° 30' 0.23	42° 01' 1.10	19° 96' 0.64	56° 7'
22	53° 57' 0.20	36° 99' 1.19	53° 53' 0.20	43° 11' 0.94	20° 60' 0.52	58° 7'
Apr. 1	53° 77' 0.16	38° 18' 1.51	53° 73' 0.18	44° 05' 0.74	21° 12' 0.38	60° 7'
11	53° 93' 0.13	39° 69' 1.78	53° 91' 0.15	44° 79' 0.58	21° 50' 0.24	63° 7'
21	54° 06' 0.09	41° 47' 1.91	54° 06' 0.12	45° 37' 0.43	21° 74' 0.10	66° 7'
May 1	54° 15' 0.06	43° 38' 2.01	54° 18' 0.09	45° 80' 0.29	21° 84' 0.05	69° 7'
11	54° 21' 0.02	45° 39' 2.02	54° 27' 0.06	46° 09' 0.17	21° 79' 0.18	72° 7'
21	54° 23' 0.01	47° 41' 1.95	54° 33' 0.03	46° 26' 0.06	21° 61' 0.31	75° 7'
31	54° 22' 0.03	49° 36' 1.81	54° 36' 0.01	46° 32' 0.02	21° 30' 0.43	78° 7'
June 10	54° 19' 0.06	51° 17' 1.63	54° 37' 0.02	46° 30' 0.12	20° 87' 0.53	80° 7'
20	54° 13' 0.09	52° 80' 1.38	54° 35' 0.05	46° 18' 0.18	20° 34' 0.62	82° 7'
30	54° 04' 0.12	54° 18' 1.11	54° 30' 0.07	46° 00' 0.25	19° 72' 0.68	84° 7'
July 10	53° 92' 0.13	55° 29' 0.82	54° 23' 0.09	45° 75' 0.32	19° 04' 0.74	85° 6'
20	53° 79' 0.14	56° 11' 0.46	54° 14' 0.11	45° 43' 0.37	18° 30' 0.78	86° 3'
30	53° 65' 0.16	56° 57' 0.14	54° 03' 0.13	45° 06' 0.42	17° 52' 0.79	86° 3'
Aug. 9	53° 49' 0.16	56° 71' 0.20	53° 90' 0.13	44° 64' 0.45	16° 73' 0.80	85° 9'
19	53° 33' 0.16	56° 51' 0.56	53° 77' 0.13	44° 19' 0.47	15° 93' 0.77	85° 0'
29	53° 17' 0.15	55° 95' 0.94	53° 64' 0.12	43° 72' 0.45	15° 16' 0.73	83° 5'
Sept. 8	53° 02' 0.13	55° 01' 1.26	53° 52' 0.11	43° 27' 0.41	14° 43' 0.68	81° 5'
18	52° 89' 0.11	53° 75' 1.62	53° 41' 0.09	42° 86' 0.35	13° 75' 0.59	79° 1'
28	52° 78' 0.08	52° 13' 1.94	53° 32' 0.05	42° 51' 0.23	13° 16' 0.50	76° 4'
Oct. 8	52° 70' 0.03	50° 19' 2.25	53° 27' 0.01	42° 28' 0.09	12° 66' 0.39	73° 2'
18	52° 67' 0.01	47° 94' 2.51	53° 26' 0.04	42° 19' 0.10	12° 27' 0.26	69° 7'
28	52° 68' 0.07	45° 43' 3.02	53° 30' 0.09	42° 29' 0.34	12° 01' 0.12	66° 0'
Nov. 7	52° 75' 0.12	42° 41' 2.95	53° 39' 0.14	42° 63' 0.55	11° 89' 0.05	61° 7'
17	52° 87' 0.17	39° 46' 3.02	53° 53' 0.19	43° 18' 0.80	11° 94' 0.20	57° 7'
27	53° 04' 0.22	36° 44' 3.05	53° 72' 0.24	43° 98' 1.06	12° 14' 0.20	
Dec. 7	53° 26' 0.27	33° 39' 2.99	53° 96' 0.27	45° 04' 1.25	12° 00' 0.20	
17	53° 53' 0.30	30° 40' 2.86	54° 23' 0.31	46° 29' 1.46	12° 00' 0.20	
27	53° 83' 0.33	27° 54' 2.61	54° 54' 0.33	47° 75' 1.60	13° 00' 0.20	
37	54° 16' 0.33	24° 93' 2.61	54° 87' 0.33	49° 35' 1.60	14° 00' 0.20	

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	β Libræ.		α CORONÆ BOREALIS.		α SERPENTIS.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 15	^m 8	^h 15	^m 27	^h 15	^m 36
	^s 8	^s 46	^s 27	^s 15	^s 36	^s 56
an. 1	13° 28'	35° 72'	45° 94'	53° 33'	13° 15'	31° 42'
11	13° 60'	37° 45'	46° 24'	50° 67'	13° 44'	29° 26'
21	13° 92'	39° 18'	46° 57'	48° 35'	13° 75'	27° 25'
31	14° 25'	40° 85'	46° 91'	46° 42'	14° 07'	25° 44'
	0° 33'	1° 56'	0° 34'	1° 47'	0° 32'	1° 53'
eb. 10	14° 58'	42° 41'	47° 25'	44° 95'	14° 39'	23° 91'
20	14° 89'	43° 80'	47° 57'	43° 98'	14° 70'	22° 72'
ar. 2	15° 18'	44° 99'	47° 89'	43° 55'	15° 00'	21° 86'
12	15° 46'	45° 96'	48° 19'	43° 63'	15° 28'	21° 36'
	0° 25'	0° 76'	0° 26'	0° 56'	0° 26'	0° 12'
22	15° 71'	46° 72'	48° 45'	44° 19'	15° 54'	21° 24'
pr. 1	15° 93'	47° 24'	48° 69'	45° 20'	15° 77'	21° 44'
11	16° 12'	47° 56'	48° 90'	46° 60'	15° 98'	21° 95'
21	16° 29'	47° 69'	49° 08'	48° 31'	16° 17'	22° 72'
	0° 14'	0° 03'	0° 14'	1° 95'	0° 15'	0° 96'
ay 1	16° 43'	47° 66'	49° 22'	50° 26'	16° 32'	23° 68'
11	16° 54'	47° 50'	49° 33'	52° 35'	16° 45'	24° 81'
21	16° 62'	47° 24'	49° 41'	54° 52'	16° 55'	26° 03'
31	16° 68'	46° 90'	49° 45'	56° 66'	16° 62'	27° 28'
	0° 03'	0° 39'	0° 00'	2° 07'	0° 04'	1° 25'
une 10	16° 71'	46° 51'	49° 45'	58° 73'	16° 66'	28° 53'
20	16° 70'	46° 09'	49° 43'	60° 65'	16° 67'	29° 74'
30	16° 67'	45° 66'	49° 37'	62° 37'	16° 65'	30° 85'
uly 10	16° 62'	45° 22'	49° 28'	63° 84'	16° 60'	31° 85'
	0° 08'	0° 43'	0° 12'	1° 18'	0° 08'	0° 86'
20	16° 54'	44° 79'	49° 16'	65° 02'	16° 52'	32° 71'
30	16° 43'	44° 38'	49° 02'	65° 88'	16° 41'	33° 42'
ug. 9	16° 31'	43° 99'	48° 87'	66° 41'	16° 29'	33° 93'
19	16° 18'	43° 64'	48° 70'	66° 59'	16° 15'	34° 25'
	0° 14'	0° 30'	0° 18'	0° 18'	0° 14'	0° 14'
29	16° 04'	43° 34'	48° 52'	66° 41'	16° 01'	34° 39'
ept. 8	15° 91'	43° 11'	48° 34'	65° 85'	15° 86'	34° 31'
18	15° 79'	42° 95'	48° 17'	64° 94'	15° 72'	34° 01'
28	15° 69'	42° 92'	48° 02'	63° 66'	15° 59'	33° 47'
	0° 07'	0° 10'	0° 12'	1° 65'	0° 10'	0° 78'
ct. 8	15° 62'	43° 02'	47° 90'	62° 01'	15° 49'	32° 69'
18	15° 58'	43° 28'	47° 82'	60° 04'	15° 43'	31° 67'
28	15° 59'	43° 73'	47° 77'	57° 75'	15° 40'	30° 40'
ov. 7	15° 63'	44° 39'	47° 78'	55° 20'	15° 42'	28° 89'
	0° 11'	0° 97'	0° 06'	3° 08'	0° 07'	1° 91'
		45° 36'	47° 84'	52° 12'	15° 49'	26° 98'
		6° 48'	47° 96'	49° 16'	15° 61'	25° 04'
		79	48° 13'	46° 12'	15° 78'	22° 94'
		76	48° 34'	43° 07'	16° 00'	20° 74'
		0° 62'	0° 26'	2° 95'	0° 25'	2° 23'
			18° 60'	40° 12'	16° 25'	18° 51'
			89	37° 35'	16° 53'	16° 33'

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	ζ Ursæ Minoris.		β ¹ Scorpii.		δ OPHIUCHI.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec.
	^h 15 ^m 49	[°] 78 ['] 17	^h 15 ^m 55	[°] 19 ['] 21	^h 16 ^m 5	[°] 3
Jan. 1	58° 99' 00"	14° 81' 00"	56° 45' 00"	8° 77' 00"	46° 96' 00"	10° 10' 00"
11	59° 78' 00"	11° 93' 28"	56° 75' 30"	9° 86' 10"	47° 23' 27"	11° 89' 00"
21	60° 71' 00"	9° 55' 38"	57° 07' 32"	11° 04' 18"	47° 53' 30"	13° 57' 00"
31	61° 74' 00"	7° 76' 17"	57° 41' 34"	12° 28' 24"	47° 84' 31"	15° 10' 00"
Feb. 10	62° 83' 00"	6° 60' 16"	57° 75' 34"	13° 50' 22"	48° 16' 32"	16° 57' 00"
20	63° 95' 12"	6° 09' 51"	58° 09' 34"	14° 70' 20"	48° 48' 32"	17° 77' 00"
Mar. 2	65° 05' 10"	6° 28' 19"	58° 41' 32"	15° 81' 11"	48° 79' 31"	18° 77' 00"
12	66° 10' 05"	7° 12' 84"	58° 72' 31"	16° 83' 02"	49° 08' 29"	19° 47' 00"
22	67° 06' 96"	8° 54' 142"	59° 01' 29"	17° 72' 89"	49° 35' 27"	19° 88' 00"
Apr. 1	67° 90' 84"	10° 50' 196"	59° 28' 27"	18° 48' 76"	49° 61' 26"	19° 97' 00"
11	68° 59' 69"	12° 91' 241"	59° 53' 25"	19° 12' 64"	49° 85' 24"	19° 88' 00"
21	69° 11' 52"	15° 65' 274"	59° 75' 22"	19° 63' 51"	50° 07' 22"	19° 57' 00"
May 1	69° 46' 35"	18° 64' 299"	59° 95' 20"	20° 04' 41"	50° 25' 18"	19° 00' 00"
11	69° 62' 16"	21° 75' 311"	60° 12' 17"	20° 35' 31"	50° 41' 16"	18° 47' 00"
21	69° 59' 03"	24° 87' 312"	60° 26' 14"	20° 59' 24"	50° 55' 14"	17° 60' 00"
31	69° 38' 21"	27° 91' 304"	60° 36' 10"	20° 75' 16"	50° 65' 10"	16° 88' 00"
June 10	69° 00' 38"	30° 75' 284"	60° 44' 08"	20° 87' 12"	50° 73' 08"	16° 00' 00"
20	68° 45' 55"	33° 32' 257"	60° 48' 04"	20° 93' 06"	50° 77' 04"	15° 52' 00"
30	67° 76' 69"	35° 55' 223"	60° 48' 00"	20° 95' 02"	50° 77' 00"	14° 57' 00"
July 10	66° 95' 81"	37° 38' 183"	60° 45' 03"	20° 93' 02"	50° 74' 03"	13° 77' 00"
20	66° 02' 93"	38° 76' 138"	60° 39' 06"	20° 86' 07"	50° 69' 05"	13° 17' 00"
30	65° 01' 101"	39° 67' 091"	60° 30' 09"	20° 74' 12"	50° 61' 08"	12° 47' 00"
Aug. 9	63° 94' 107"	40° 07' 040"	60° 18' 12"	20° 57' 17"	50° 53' 11"	12° 17' 00"
19	62° 83' 111"	39° 95' 012"	60° 04' 14"	20° 34' 23"	50° 37' 13"	11° 47' 00"
29	61° 71' 112"	39° 31' 064"	59° 89' 15"	20° 07' 27"	50° 22' 15"	11° 17' 00"
Sept. 8	60° 60' 111"	38° 16' 115"	59° 74' 15"	19° 76' 31"	50° 07' 15"	11° 17' 00"
18	59° 52' 108"	36° 52' 164"	59° 59' 15"	19° 42' 34"	49° 92' 15"	11° 17' 00"
28	58° 52' 100"	34° 42' 210"	59° 46' 13"	19° 08' 34"	49° 79' 13"	11° 17' 00"
Oct. 8	57° 61' 91"	31° 88' 254"	59° 35' 11"	18° 77' 31"	49° 68' 11"	11° 17' 00"
18	56° 82' 79"	28° 95' 293"	59° 27' 08"	18° 51' 26"	49° 59' 09"	12° 77' 00"
28	56° 18' 64"	25° 70' 325"	59° 24' 03"	18° 34' 17"	49° 54' 05"	13° 03' 00"
Nov. 7	55° 70' 48"	22° 19' 351"	59° 25' 01"	18° 31' 03"	49° 54' 00"	13° 9' 00"
17	55° 40' 30"	18° 48' 371"	59° 31' 06"	18° 42' 11"	49° 59' 05"	14° 98' 00"
27	55° 31' 09"	14° 30' 418"	59° 44' 13"	18° 75' 33"	49° 69' 10"	16° 33' 00"
Dec. 7	55° 43' 12"	10° 50' 380"	59° 62' 18"	19° 25' 50"	49° 84' 15"	17° 77' 00"
17	55° 76' 33"	6° 85' 365"	59° 84' 22"	19° 93' 68"	50° 03' 19"	19° 34' 00"
27	56° 29' 53"	3° 42' 343"	60° 10' 26"	20° 79' 86"	50° 26' 23"	21° 02' 00"
37	56° 99' 70"	0° 35' 307"	60° 39' 29"	21° 81' 102"	50° 53' 27"	22° 74' 00"

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α SCORPII. (Antares)		η Draconis.		α Trianguli Australis.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. South.
	^h 16	^m 19	^h 16	^m 21	^h 16	^m 31
	^s 49	^s 30	^s 57	^s 36	^s 04	^s 61
	[°] 26	[°] 3	[°] 61	[°] 52	[°] 68	[°] 42
	['] 49	['] 35	['] 57	['] 38	['] 04	['] 28
	^{''} 0	^{''} 64	^{''} 0	^{''} 25	^{''} 0	^{''} 45
Jan. 11	23 49	48 35	45 57	48 78	24 04	52 28
21	23 79	48 99	45 93	45 53	24 65	50 83
31	24 12	49 75	46 35	42 69	25 34	49 79
	24 46	50 62	46 82	40 36	26 08	49 16
		0 94		1 74		0 22
Feb. 10	24 81	51 56	47 33	38 62	26 85	48 94
20	25 16	52 52	47 85	37 54	27 63	49 16
Mar. 2	25 51	53 49	48 37	37 12	28 41	49 77
12	25 84	54 43	48 88	37 37	29 18	50 76
		0 89		0 91		1 35
22	26 16	55 32	49 36	38 28	29 92	52 11
pr. 1	26 46	56 15	49 80	39 78	30 62	53 77
11	26 74	56 93	50 19	41 81	31 26	55 71
21	26 99	57 63	50 52	44 26	31 85	57 88
		0 64		2 80		2 39
May 1	27 22	58 27	50 78	47 06	32 37	60 27
11	27 42	58 86	50 97	50 08	32 82	62 79
21	27 59	59 40	51 08	53 23	33 18	65 41
31	27 73	59 91	51 11	56 38	33 45	68 09
		0 46		3 08		2 66
June 10	27 83	60 37	51 08	59 46	33 63	70 75
20	27 89	60 78	50 97	62 37	33 71	73 33
30	27 92	61 14	50 79	65 02	33 69	75 78
July 10	27 90	61 45	50 55	67 33	33 58	78 02
		0 23		1 94		1 98
20	27 85	61 68	50 25	69 27	33 37	80 00
30	27 77	61 83	49 90	70 78	33 07	81 65
Aug. 9	27 66	61 89	49 51	71 80	32 70	82 91
19	27 52	61 83	49 08	72 35	32 28	83 75
		0 17		0 05		0 38
29	27 36	61 66	48 64	72 40	31 81	84 13
Sept. 8	27 19	61 41	48 19	71 90	31 33	84 04
18	27 02	61 05	47 74	70 90	30 85	83 45
28	26 87	60 61	47 31	69 41	30 39	82 41
		0 48		2 00		1 45
Oct. 8	26 74	60 13	46 92	67 41	29 98	80 96
18	26 64	59 62	46 57	64 98	29 65	79 11
28	26 58	59 14	46 29	62 14	29 41	76 97
Nov. 7	26 57	58 72	46 08	58 95	29 28	74 62
		0 32		3 49		2 47
17	26 62	58 40	45 95	55 46	29 28	72 15
27	26 73	58 20	45 91	51 4	29 39	69 63
Dec. 7	26 88	58 19	45 97	47	29 67	66 98
17	27 09	58 37	46 11	4		64 75
		0 36		0 0		1 99
27	27 35	58 73				62 76
37	27 64	59 25				61 11

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Ursæ Minoris.		σ Octantis.	
	R. A.	Dec. North.	R. A.	Dec. South.
	^h 17	^o 82	^h 17	^o 89
	^m ^s ^s	^m ^s ^s	^m ^s ^s	^m ^s ^s
Jan. 1	2 47.89	17 22.76	5 3.56	15 32.56
11	2 48.56	19.46	5 16.21	30.06
21	2 49.51	16.51	5 31.30	27.95
31	2 50.70	13.99	5 48.34	26.28
	1.38	1.99	18.62	
Feb. 10	2 52.08	12.00	6 6.96	25.09
20	2 53.60	10.59	6 26.58	24.40
Mar. 2	2 55.20	9.83	6 46.77	24.23
12	2 56.82	9.73	7 7.08	24.55
	1.58	0.56	19.94	
22	2 58.40	10.29	7 27.02	25.36
Apr. 1	2 59.87	11.44	7 46.21	26.64
11	3 1.20	13.16	8 4.27	28.35
21	3 2.33	15.35	8 20.80	30.44
	0.90	2.58	14.71	
May 1	3 3.23	17.93	8 35.51	32.87
11	3 3.87	20.81	8 48.10	35.61
21	3 4.24	23.87	8 58.28	38.56
31	3 4.33	27.02	9 5.89	41.69
	0.20	3.13	4.85	
June 10	3 4.13	30.15	9 10.74	44.90
20	3 3.66	33.18	9 12.77	48.14
30	3 2.92	36.01	9 11.88	51.30
July 10	3 1.94	38.58	9 8.19	54.32
	1.20	2.24	6.44	
20	3 0.74	40.82	9 1.75	57.11
30	2 59.34	42.67	8 52.86	15 59.56
Aug. 9	2 57.78	44.10	8 41.71	16 1.64
19	2 56.10	45.06	8 28.75	3.25
	1.77	0.48	14.37	
29	2 54.33	45.54	8 14.38	4.34
Sept. 8	2 52.50	45.53	7 59.16	4.85
18	2 50.67	45.02	7 43.66	4.78
28	2 48.86	44.01	7 28.43	4.10
	1.73	1.51	14.25	
Oct. 8	2 47.13	42.50	7 14.18	2.85
18	2 45.51	40.54	7 1.45	16 1.07
28	2 44.05	38.14	6 50.75	15 58.81
Nov. 7	2 42.79	35.36	6 42.63	56.15
	1.02	3.13	5.14	
17	2 41.77	32.23	6 37.49	53.20
27	2 41.02	28.86	6 35.45	50.06
Dec. 7	2 40.54	24.94	6 36.93	46.85
17	2 40.42	21.33	6 42.38	43.40
	0.28	3.58	8.16	
27	2 40.70	17.75	6 50.54	40.43
37	2 41.19	17 14.34	7 1.86	15 37.73

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the month.	α HERCULIS.		β DRACONIS.		α OPHIUCHI.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 17 ^m 7	[°] 14 ['] 34	^h 17 ^m 26	[°] 52 ['] 25	^h 17 ^m 27	[°] 12 ['] 40
n. 1	11 ^s 33 ^s	45 ^h 71 ^h	42 ^s 98 ^s	16 ^h 95 ^h	20 ^s 43 ^s	57 ^h 90 ^h
11	11 ^s 55 ^s 0 ^s 22	43 ^h 34 ^h 2 ^h 37	43 ^s 19 ^s 0 ^s 21	13 ^h 50 ^h 3 ^h 45	20 ^s 63 ^s 0 ^s 20	55 ^h 64 ^h 2 ^h 26
21	11 ^s 80 ^s 0 ^s 25	41 ^h 12 ^h 2 ^h 22	43 ^s 47 ^s 0 ^s 28	10 ^h 29 ^h 3 ^h 21	20 ^s 86 ^s 0 ^s 23	53 ^h 51 ^h 2 ^h 13
31	12 ^s 08 ^s 0 ^s 28	39 ^h 13 ^h 1 ^h 99	43 ^s 79 ^s 0 ^s 32	7 ^h 45 ^h 2 ^h 84	21 ^s 12 ^s 0 ^s 26	51 ^h 57 ^h 1 ^h 94
	0 ^s 29	1 ^h 70	0 ^s 36	2 ^h 34	0 ^s 28	1 ^h 66
b. 10	12 ^s 37 ^s 0 ^s 30	37 ^h 43 ^h 1 ^h 32	44 ^s 15 ^s 0 ^s 39	5 ^h 11 ^h 1 ^h 80	21 ^s 40 ^s 0 ^s 30	49 ^h 91 ^h 1 ^h 34
20	12 ^s 67 ^s 0 ^s 31	36 ^h 11 ^h 0 ^h 93	44 ^s 54 ^s 0 ^s 41	3 ^h 31 ^h 1 ^h 18	21 ^s 70 ^s 0 ^s 30	48 ^h 57 ^h 0 ^h 94
ar. 2	12 ^s 98 ^s 0 ^s 30	35 ^h 18 ^h 0 ^h 50	44 ^s 95 ^s 0 ^s 42	2 ^h 13 ^h 0 ^h 52	22 ^s 00 ^s 0 ^s 30	47 ^h 63 ^h 0 ^h 52
12	13 ^s 28 ^s 0 ^s 30	34 ^h 68 ^h 0 ^h 06	45 ^s 37 ^s 0 ^s 41	1 ^h 61 ^h 0 ^h 12	22 ^s 30 ^s 0 ^s 30	47 ^h 11 ^h 0 ^h 10
	0 ^s 30	0 ^h 06	0 ^s 41	0 ^h 12	0 ^s 30	0 ^h 10
22	13 ^s 58 ^s 0 ^s 28	34 ^h 62 ^h 0 ^h 38	45 ^s 78 ^s 0 ^s 40	1 ^h 73 ^h 0 ^h 77	22 ^s 60 ^s 0 ^s 29	47 ^h 01 ^h 0 ^h 31
pr. 1	13 ^s 86 ^s 0 ^s 27	35 ^h 00 ^h 0 ^h 76	46 ^s 18 ^s 0 ^s 37	2 ^h 50 ^h 1 ^h 36	22 ^s 89 ^s 0 ^s 28	47 ^h 32 ^h 0 ^h 69
11	14 ^s 13 ^s 0 ^s 25	35 ^h 76 ^h 1 ^h 12	46 ^s 55 ^s 0 ^s 34	3 ^h 86 ^h 1 ^h 90	23 ^s 17 ^s 0 ^s 26	48 ^h 01 ^h 1 ^h 06
21	14 ^s 38 ^s 0 ^s 23	36 ^h 88 ^h 1 ^h 41	46 ^s 89 ^s 0 ^s 31	5 ^h 76 ^h 2 ^h 34	23 ^s 43 ^s 0 ^s 25	49 ^h 07 ^h 1 ^h 34
	0 ^s 23	1 ^h 41	0 ^s 31	2 ^h 34	0 ^s 25	1 ^h 34
ay 1	14 ^s 61 ^s 0 ^s 21	38 ^h 29 ^h 1 ^h 65	47 ^s 20 ^s 0 ^s 26	8 ^h 10 ^h 2 ^h 70	23 ^s 68 ^s 0 ^s 22	50 ^h 41 ^h 1 ^h 58
11	14 ^s 82 ^s 0 ^s 18	39 ^h 94 ^h 1 ^h 80	47 ^s 46 ^s 0 ^s 21	10 ^h 80 ^h 2 ^h 95	23 ^s 90 ^s 0 ^s 19	51 ^h 99 ^h 1 ^h 74
21	15 ^s 00 ^s 0 ^s 14	41 ^h 74 ^h 1 ^h 89	47 ^s 67 ^s 0 ^s 15	13 ^h 75 ^h 3 ^h 12	24 ^s 09 ^s 0 ^s 17	53 ^h 73 ^h 1 ^h 86
31	15 ^s 14 ^s 0 ^s 12	43 ^h 63 ^h 1 ^h 93	47 ^s 82 ^s 0 ^s 10	16 ^h 87 ^h 3 ^h 19	24 ^s 26 ^s 0 ^s 13	55 ^h 59 ^h 1 ^h 89
	0 ^s 12	1 ^h 93	0 ^s 10	3 ^h 19	0 ^s 13	1 ^h 89
me 10	15 ^s 26 ^s 0 ^s 08	45 ^h 56 ^h 1 ^h 89	47 ^s 92 ^s 0 ^s 04	20 ^h 06 ^h 3 ^h 16	24 ^s 39 ^s 0 ^s 10	57 ^h 48 ^h 1 ^h 88
20	15 ^s 34 ^s 0 ^s 03	47 ^h 45 ^h 1 ^h 80	47 ^s 96 ^s 0 ^s 03	23 ^h 22 ^h 3 ^h 03	24 ^s 49 ^s 0 ^s 06	59 ^h 36 ^h 1 ^h 79
30	15 ^s 37 ^s 0 ^s 00	49 ^h 25 ^h 1 ^h 67	47 ^s 93 ^s 0 ^s 08	26 ^h 25 ^h 2 ^h 85	24 ^s 55 ^s 0 ^s 02	61 ^h 15 ^h 1 ^h 68
ly 10	15 ^s 37 ^s 0 ^s 03	50 ^h 92 ^h 1 ^h 49	47 ^s 85 ^s 0 ^s 13	29 ^h 10 ^h 2 ^h 57	24 ^s 57 ^s 0 ^s 02	62 ^h 83 ^h 1 ^h 52
	0 ^s 03	1 ^h 49	0 ^s 13	2 ^h 57	0 ^s 02	1 ^h 52
20	15 ^s 34 ^s 0 ^s 07	52 ^h 41 ^h 1 ^h 29	47 ^s 72 ^s 0 ^s 19	31 ^h 67 ^h 2 ^h 24	24 ^s 55 ^s 0 ^s 06	64 ^h 35 ^h 1 ^h 32
30	15 ^s 27 ^s 0 ^s 11	53 ^h 70 ^h 1 ^h 05	47 ^s 53 ^s 0 ^s 24	33 ^h 91 ^h 1 ^h 85	24 ^s 49 ^s 0 ^s 08	65 ^h 67 ^h 1 ^h 11
ug. 9	15 ^s 16 ^s 0 ^s 13	54 ^h 75 ^h 0 ^h 80	47 ^s 29 ^s 0 ^s 28	35 ^h 76 ^h 1 ^h 44	24 ^s 41 ^s 0 ^s 12	66 ^h 78 ^h 0 ^h 87
19	15 ^s 03 ^s 0 ^s 15	55 ^h 55 ^h 0 ^h 53	47 ^s 01 ^s 0 ^s 31	37 ^h 20 ^h 0 ^h 97	24 ^s 29 ^s 0 ^s 15	67 ^h 65 ^h 0 ^h 60
	0 ^s 15	0 ^h 53	0 ^s 31	0 ^h 97	0 ^s 15	0 ^h 60
29	14 ^s 88 ^s 0 ^s 17	56 ^h 08 ^h 0 ^h 24	46 ^s 70 ^s 0 ^s 33	38 ^h 17 ^h 0 ^h 48	24 ^s 14 ^s 0 ^s 16	68 ^h 25 ^h 0 ^h 35
pt. 8	14 ^s 71 ^s 0 ^s 17	56 ^h 32 ^h 0 ^h 03	46 ^s 37 ^s 0 ^s 35	38 ^h 65 ^h 0 ^h 00	23 ^s 98 ^s 0 ^s 18	68 ^h 60 ^h 0 ^h 06
18	14 ^s 54 ^s 0 ^s 18	56 ^h 29 ^h 0 ^h 36	46 ^s 02 ^s 0 ^s 35	38 ^h 65 ^h 0 ^h 52	23 ^s 80 ^s 0 ^s 17	68 ^h 66 ^h 0 ^h 21
28	14 ^s 36 ^s 0 ^s 16	55 ^h 93 ^h 0 ^h 64	45 ^s 67 ^s 0 ^s 33	38 ^h 13 ^h 1 ^h 02	23 ^s 63 ^s 0 ^s 17	68 ^h 45 ^h 0 ^h 51
	0 ^s 16	0 ^h 64	0 ^s 33	1 ^h 02	0 ^s 17	0 ^h 51
ct. 8	14 ^s 20 ^s 0 ^s 14	55 ^h 29 ^h 0 ^h 95	45 ^s 34 ^s 0 ^s 41	37 ^h 11 ^h 1 ^h 52	23 ^s 46 ^s 0 ^s 15	67 ^h 94 ^h 0 ^h 78
18	14 ^s 06 ^s 0 ^s 11	54 ^h 34 ^h 1 ^h 23	45 ^s 00 ^s 0 ^s 44	35 ^h 59 ^h 2 ^h 00	23 ^s 31 ^s 0 ^s 12	67 ^h 16 ^h 1 ^h 08
28	13 ^s 95 ^s 0 ^s 07	53 ^h 11 ^h 1 ^h 53	44 ^s 00 ^s 0 ^s 41	33 ^h 59 ^h 2 ^h 43	23 ^s 19 ^s 0 ^s 08	66 ^h 08 ^h 1 ^h 35
ov. 7	13 ^s 88 ^s 0 ^s 03	51 ^h 58 ^h 1 ^h 79	43 ^s 00 ^s 0 ^s 36	31 ^h 16 ^h 2 ^h 82	23 ^s 11 ^s 0 ^s 04	64 ^h 73 ^h 1 ^h 61
	0 ^s 03	1 ^h 79	0 ^s 36	2 ^h 82	0 ^s 04	1 ^h 61
17	13 ^s 85 ^s 0 ^s 00	49 ^h 79 ^h 1 ^h 41	42 ^s 34 ^s 0 ^s 16	28 ^h 34 ^h 3 ^h 16	23 ^s 07 ^s 0 ^s 00	63 ^h 12 ^h 1 ^h 84
27	13 ^s 87 ^s 0 ^s 00	49 ^h 79 ^h 1 ^h 41	42 ^s 18 ^s 0 ^s 18	25 ^h 18 ^h 3 ^h 40	23 ^s 07 ^s 0 ^s 05	61 ^h 28 ^h 2 ^h 03
ec. 7	13 ^s 94 ^s 0 ^s 01	49 ^h 79 ^h 1 ^h 41	41 ^s 78 ^s 0 ^s 19	21 ^h 78 ^h 3 ^h 93	23 ^s 12 ^s 0 ^s 10	59 ^h 25 ^h 2 ^h 41
17	14 ^s 07 ^s 0 ^s 01	49 ^h 79 ^h 1 ^h 41	40 ^s 72 ^s 0 ^s 19	7 ^h 85 ^h 3 ^h 66	23 ^s 22 ^s 0 ^s 15	56 ^h 84 ^h 2 ^h 27
	0 ^s 01	1 ^h 41	0 ^s 19	3 ^h 66	0 ^s 15	2 ^h 27
27	14 ^s 23 ^s 0 ^s 01	49 ^h 79 ^h 1 ^h 41	40 ^s 72 ^s 0 ^s 19	1 ^h 19 ^h 3 ^h 47	23 ^s 37 ^s 0 ^s 19	54 ^h 57 ^h 2 ^h 26
37	14 ^s 07 ^s 0 ^s 01	49 ^h 79 ^h 1 ^h 41	40 ^s 72 ^s 0 ^s 19	0 ^h 72 ^h 3 ^h 47	23 ^s 37 ^s 0 ^s 19	52 ^h 31 ^h 2 ^h 26

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	γ DRACONIS.		μ^1 Sagittarii.		α LYRÆ. (Vega)	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec.
	^h 17 ^m 52	[°] 51 ['] 30	^h 18 ^m 3	[°] 21 ['] 5	^h 18 ^m 31	[°] 38
Jan. 1	47° 13' ^s	27° 72' ["]	59° 03' ^s	41° 84' ["]	22° 98' ^s	59° 44' ["]
11	47° 30' 0' 17	24° 24' 3' 48	59° 23' 0' 20	42° 12' 0' 28	23° 11' 0' 13	56° 17' ["]
21	47° 54' 0' 24	20° 95' 3' 29	59° 47' 0' 24	42° 43' 0' 31	23° 29' 0' 18	53° 10' ["]
31	47° 83' 0' 29	17° 99' 2' 96	59° 74' 0' 27	42° 76' 0' 33	23° 50' 0' 21	50° 27' ["]
	0' 33	2' 54	0' 30	0' 31	0' 25	
Feb. 10	48° 16' 0' 36	15° 45' 2' 01	60° 04' 0' 32	43° 07' 0' 27	23° 75' 0' 29	47° 75' ["]
20	48° 52' 0' 39	13° 44' 1' 43	60° 36' 0' 33	43° 34' 0' 21	24° 04' 0' 31	45° 66' ["]
Mar. 2	48° 91' 0' 40	12° 01' 0' 78	60° 69' 0' 32	43° 55' 0' 14	24° 35' 0' 33	44° 08' ["]
12	49° 31' 0' 41	11° 23' 0' 14	61° 01' 0' 31	43° 69' 0' 04	24° 68' 0' 33	43° 03' ["]
	0' 40	0' 50	0' 31	0' 05	0' 34	
Apr. 1	49° 72' 0' 40	11° 09' 0' 50	61° 32' 0' 31	43° 73' 0' 05	25° 01' 0' 34	42° 62' ["]
11	50° 12' 0' 38	11° 59' 1' 12	61° 63' 0' 32	43° 68' 0' 13	25° 35' 0' 34	42° 77' ["]
21	50° 50' 0' 36	12° 71' 1' 68	61° 95' 0' 31	43° 55' 0' 20	25° 69' 0' 33	43° 51' ["]
	0' 33	2' 15	0' 30	0' 25	0' 31	
May 1	51° 19' 0' 29	16° 54' 2' 57	62° 56' 0' 28	43° 10' 0' 27	26° 33' 0' 29	46° 56' ["]
11	51° 48' 0' 24	19° 11' 2' 88	62° 84' 0' 26	42° 83' 0' 27	26° 62' 0' 26	48° 76' ["]
21	51° 72' 0' 19	21° 99' 3' 09	63° 10' 0' 23	42° 56' 0' 24	26° 88' 0' 23	51° 30' ["]
31	51° 91' 0' 14	25° 08' 3' 21	63° 33' 0' 20	42° 32' 0' 21	27° 11' 0' 18	54° 08' ["]
	0' 07	3' 22	0' 17	0' 15	0' 14	
June 10	52° 05' 0' 02	28° 29' 3' 15	63° 53' 0' 12	42° 11' 0' 08	27° 29' 0' 09	57° 03' ["]
20	52° 12' 0' 05	31° 51' 3' 02	63° 70' 0' 08	41° 96' 0' 03	27° 43' 0' 04	60° 06' ["]
30	52° 14' 0' 10	34° 66' 2' 77	63° 82' 0' 04	41° 88' 0' 04	27° 52' 0' 01	63° 10' ["]
July 10	52° 09' 0' 15	37° 68' 2' 48	63° 90' 0' 01	41° 85' 0' 08	27° 56' 0' 05	66° 04' ["]
	0' 21	2' 14	0' 05	0' 12	0' 11	
20	51° 99' 0' 25	40° 45' 1' 74	63° 94' 0' 09	41° 89' 0' 13	27° 55' 0' 15	68° 78' ["]
30	51° 84' 0' 29	42° 93' 1' 31	63° 93' 0' 12	41° 97' 0' 13	27° 50' 0' 21	71° 32' ["]
Aug. 9	51° 63' 0' 32	45° 07' 0' 83	63° 88' 0' 16	42° 09' 0' 11	27° 39' 0' 24	73° 60' ["]
19	51° 38' 0' 34	46° 81' 0' 16	63° 79' 0' 17	42° 22' 0' 04	27° 24' 0' 26	75° 56' ["]
	0' 29	0' 66	0' 16	0' 13	0' 18	
29	51° 09' 0' 32	48° 12' 0' 35	63° 67' 0' 15	42° 35' 0' 11	27° 06' 0' 21	77° 14' ["]
Sept. 8	50° 77' 0' 34	48° 95' 0' 35	63° 52' 0' 16	42° 46' 0' 09	26° 85' 0' 24	78° 31' ["]
18	50° 43' 0' 34	49° 30' 0' 16	63° 36' 0' 17	42° 55' 0' 04	26° 61' 0' 26	79° 03' ["]
28	50° 09' 0' 33	49° 14' 0' 66	63° 19' 0' 16	42° 59' 0' 01	26° 35' 0' 25	79° 35' ["]
	0' 32	1' 17	0' 15	0' 03	0' 24	
Oct. 8	49° 76' 0' 29	48° 48' 1' 66	63° 03' 0' 13	42° 60' 0' 05	26° 10' 0' 22	79° 19' ["]
18	49° 44' 0' 24	47° 31' 2' 12	62° 88' 0' 10	42° 57' 0' 05	25° 86' 0' 20	78° 57' ["]
28	49° 15' 0' 19	45° 65' 2' 56	62° 75' 0' 05	42° 52' 0' 04	25° 64' 0' 16	77° 47' ["]
Nov. 7	48° 91' 0' 14	43° 53' 2' 93	62° 65' 0' 01	42° 47' 0' 01	25° 44' 0' 11	75° 94' ["]
	0' 07	3' 23	0' 05	0' 05	0' 09	
17	48° 72' 0' 08	40° 97' 3' 89	62° 60' 0' 14	42° 43' 0' 17	25° 28' 0' 11	73° 99' ["]
27	48° 58' 0' 00	38° 04' 3' 43	62° 59' 0' 09	42° 42' 0' 11	25° 17' 0' 09	
Dec. 7	48° 51' 0' 08	34° 81' 3' 54	62° 64' 0' 19	42° 47' 0' 22	25° 10' 0' 11	
17	48° 51' 0' 14	31° 38' 3' 54	62° 73' 0' 19	42° 58' 0' 22	25° 09' 0' 11	
	0' 14	3' 54	0' 19	0' 22	0' 11	
27	48° 59' 0' 14	27° 49' 3' 54	62° 87' 0' 19	42° 75' 0' 22	25° 13' 0' 11	
37	48° 73' 0' 14	23° 95' 3' 54	63° 06' 0' 19	42° 97' 0' 22	25° 24' 0' 11	

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	β LYRÆ.		ζ AQUILÆ.		δ AQUILÆ.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 18 ^m 44	^o 33 ⁱ 10	^h 18 ^m 57	^o 13 ⁱ 37	^h 19 ^m 17	^o 2 ⁱ 47
Jan. 1	1 ^s 75 ^s	32 ^s 32 ^s	53 ^s 22 ^s	29 ^s 42 ^s	14 ^s 74 ^s	36 ^s 06 ^s
11	*1 ^s 87 ^s 0 ^s 12	29 ^s 05 ^s 2 ^s 27	*53 ^s 35 ^s 0 ^s 13	27 ^s 12 ^s 2 ^s 30	*14 ^s 85 ^s 0 ^s 11	34 ^s 47 ^s 1 ^s 59
21	2 ^s 03 ^s 0 ^s 16	26 ^s 16 ^s 2 ^s 29	53 ^s 50 ^s 0 ^s 15	25 ^s 09 ^s 2 ^s 03	15 ^s 00 ^s 0 ^s 15	33 ^s 06 ^s 1 ^s 41
31	2 ^s 23 ^s 0 ^s 20	23 ^s 46 ^s 2 ^s 70	53 ^s 69 ^s 0 ^s 19	23 ^s 18 ^s 1 ^s 91	15 ^s 17 ^s 0 ^s 17	31 ^s 76 ^s 1 ^s 30
	0 ^s 24	2 ^s 39	0 ^s 22	1 ^s 67	0 ^s 21	1 ^s 14
Feb. 10	2 ^s 47 ^s 0 ^s 24	21 ^s 07 ^s 2 ^s 39	53 ^s 91 ^s 0 ^s 22	21 ^s 51 ^s 1 ^s 41	15 ^s 38 ^s 0 ^s 23	30 ^s 62 ^s 0 ^s 91
20	2 ^s 73 ^s 0 ^s 26	19 ^s 05 ^s 2 ^s 02	54 ^s 15 ^s 0 ^s 24	20 ^s 10 ^s 1 ^s 05	15 ^s 61 ^s 0 ^s 25	29 ^s 71 ^s 0 ^s 67
Mar. 2	3 ^s 02 ^s 0 ^s 29	17 ^s 49 ^s 1 ^s 56	54 ^s 41 ^s 0 ^s 26	19 ^s 05 ^s 0 ^s 68	15 ^s 86 ^s 0 ^s 27	29 ^s 04 ^s 0 ^s 36
12	3 ^s 32 ^s 0 ^s 30	16 ^s 47 ^s 1 ^s 02	54 ^s 68 ^s 0 ^s 27	18 ^s 37 ^s 0 ^s 25	16 ^s 13 ^s 0 ^s 28	28 ^s 68 ^s 0 ^s 04
	0 ^s 32	0 ^s 48	0 ^s 29	0 ^s 25	0 ^s 28	0 ^s 04
22	3 ^s 64 ^s 0 ^s 33	15 ^s 99 ^s 0 ^s 11	54 ^s 97 ^s 0 ^s 30	18 ^s 12 ^s 0 ^s 18	16 ^s 41 ^s 0 ^s 29	28 ^s 64 ^s 0 ^s 29
pr. 1	3 ^s 97 ^s 0 ^s 33	16 ^s 10 ^s 0 ^s 64	55 ^s 27 ^s 0 ^s 30	18 ^s 30 ^s 0 ^s 59	16 ^s 70 ^s 0 ^s 30	28 ^s 93 ^s 0 ^s 61
11	4 ^s 30 ^s 0 ^s 32	16 ^s 74 ^s 1 ^s 17	55 ^s 57 ^s 0 ^s 30	18 ^s 89 ^s 0 ^s 97	17 ^s 00 ^s 0 ^s 30	29 ^s 54 ^s 0 ^s 90
21	4 ^s 62 ^s 0 ^s 30	17 ^s 91 ^s 1 ^s 64	55 ^s 87 ^s 0 ^s 29	19 ^s 86 ^s 1 ^s 33	17 ^s 30 ^s 0 ^s 30	30 ^s 44 ^s 1 ^s 17
May 1	4 ^s 92 ^s 0 ^s 29	19 ^s 55 ^s 2 ^s 05	56 ^s 16 ^s 0 ^s 28	21 ^s 19 ^s 1 ^s 63	17 ^s 60 ^s 0 ^s 29	31 ^s 61 ^s 1 ^s 38
11	5 ^s 21 ^s 0 ^s 26	21 ^s 60 ^s 2 ^s 39	56 ^s 44 ^s 0 ^s 26	22 ^s 82 ^s 1 ^s 86	17 ^s 89 ^s 0 ^s 27	32 ^s 99 ^s 1 ^s 56
21	5 ^s 47 ^s 0 ^s 23	23 ^s 99 ^s 2 ^s 63	56 ^s 70 ^s 0 ^s 24	24 ^s 68 ^s 2 ^s 03	18 ^s 16 ^s 0 ^s 26	34 ^s 55 ^s 1 ^s 66
31	5 ^s 70 ^s 0 ^s 20	26 ^s 62 ^s 2 ^s 81	56 ^s 94 ^s 0 ^s 22	26 ^s 71 ^s 2 ^s 13	18 ^s 42 ^s 0 ^s 24	36 ^s 21 ^s 1 ^s 71
June 10	5 ^s 90 ^s 0 ^s 16	29 ^s 43 ^s 2 ^s 88	57 ^s 16 ^s 0 ^s 18	28 ^s 84 ^s 2 ^s 18	18 ^s 66 ^s 0 ^s 20	37 ^s 92 ^s 1 ^s 73
20	6 ^s 06 ^s 0 ^s 11	32 ^s 31 ^s 2 ^s 89	57 ^s 34 ^s 0 ^s 14	31 ^s 02 ^s 2 ^s 15	18 ^s 86 ^s 0 ^s 17	39 ^s 65 ^s 1 ^s 67
30	6 ^s 17 ^s 0 ^s 07	35 ^s 20 ^s 2 ^s 82	57 ^s 48 ^s 0 ^s 10	33 ^s 17 ^s 2 ^s 08	19 ^s 03 ^s 0 ^s 13	41 ^s 32 ^s 1 ^s 60
July 10	6 ^s 24 ^s 0 ^s 01	38 ^s 02 ^s 2 ^s 68	57 ^s 58 ^s 0 ^s 06	35 ^s 25 ^s 1 ^s 94	19 ^s 16 ^s 0 ^s 08	42 ^s 92 ^s 1 ^s 47
20	6 ^s 25 ^s 0 ^s 03	40 ^s 70 ^s 2 ^s 46	57 ^s 64 ^s 0 ^s 01	37 ^s 19 ^s 1 ^s 77	19 ^s 24 ^s 0 ^s 05	44 ^s 39 ^s 1 ^s 31
30	6 ^s 22 ^s 0 ^s 07	43 ^s 16 ^s 2 ^s 22	57 ^s 65 ^s 0 ^s 03	38 ^s 96 ^s 1 ^s 58	19 ^s 29 ^s 0 ^s 00	45 ^s 70 ^s 1 ^s 14
Aug. 9	6 ^s 15 ^s 0 ^s 12	45 ^s 38 ^s 1 ^s 94	57 ^s 62 ^s 0 ^s 06	40 ^s 54 ^s 1 ^s 36	19 ^s 29 ^s 0 ^s 04	46 ^s 84 ^s 0 ^s 96
19	6 ^s 03 ^s 0 ^s 16	47 ^s 32 ^s 1 ^s 56	57 ^s 56 ^s 0 ^s 10	41 ^s 90 ^s 1 ^s 10	19 ^s 25 ^s 0 ^s 08	47 ^s 80 ^s 0 ^s 76
29	5 ^s 87 ^s 0 ^s 19	48 ^s 88 ^s 1 ^s 21	57 ^s 46 ^s 0 ^s 14	43 ^s 00 ^s 0 ^s 84	19 ^s 17 ^s 0 ^s 11	48 ^s 56 ^s 0 ^s 56
Sept. 8	5 ^s 68 ^s 0 ^s 21	50 ^s 09 ^s 0 ^s 82	57 ^s 32 ^s 0 ^s 16	43 ^s 84 ^s 0 ^s 54	19 ^s 06 ^s 0 ^s 14	49 ^s 12 ^s 0 ^s 37
18	5 ^s 47 ^s 0 ^s 22	50 ^s 91 ^s 0 ^s 39	57 ^s 16 ^s 0 ^s 17	44 ^s 38 ^s 0 ^s 27	18 ^s 92 ^s 0 ^s 16	49 ^s 49 ^s 0 ^s 15
28	5 ^s 25 ^s 0 ^s 23	51 ^s 30 ^s 0 ^s 04	56 ^s 99 ^s 0 ^s 17	44 ^s 65 ^s 0 ^s 03	18 ^s 76 ^s 0 ^s 16	49 ^s 64 ^s 0 ^s 03
Oct. 8	5 ^s 02 ^s 0 ^s 22	51 ^s 26 ^s 0 ^s 47	56 ^s 82 ^s 0 ^s 18	44 ^s 62 ^s 0 ^s 32	18 ^s 60 ^s 0 ^s 16	49 ^s 61 ^s 0 ^s 25
18	4 ^s 80 ^s 0 ^s 21	50 ^s 79 ^s 0 ^s 31	56 ^s 64 ^s 0 ^s 16	44 ^s 30 ^s 0 ^s 61	18 ^s 44 ^s 0 ^s 15	49 ^s 36 ^s 0 ^s 43
28	4 ^s 59 ^s 0 ^s 18	49 ^s 88 ^s 0 ^s 13	56 ^s 48 ^s 0 ^s 13	43 ^s 69 ^s 0 ^s 91	18 ^s 29 ^s 0 ^s 13	48 ^s 93 ^s 0 ^s 62
Nov. 7	4 ^s 41 ^s 0 ^s 14	48 ^s 54 ^s 0 ^s 11	56 ^s 35 ^s 0 ^s 11	42 ^s 78 ^s 1 ^s 18	18 ^s 16 ^s 0 ^s 10	48 ^s 31 ^s 0 ^s 80
17	4 ^s 27 ^s 0 ^s 07	46 ^s 80 ^s 0 ^s 07	56 ^s 24 ^s 0 ^s 07	41 ^s 60 ^s 1 ^s 43	18 ^s 06 ^s 0 ^s 07	47 ^s 51 ^s 0 ^s 99
27			56 ^s 17 ^s 0 ^s 03	40 ^s 17 ^s 1 ^s 68	17 ^s 99 ^s 0 ^s 04	46 ^s 52 ^s 1 ^s 13
Dec. 7			56 ^s 14 ^s 0 ^s 01	38 ^s 49 ^s 1 ^s 85	17 ^s 95 ^s 0 ^s 01	45 ^s 39 ^s 1 ^s 26
17			56 ^s 15 ^s 0 ^s 05	36 ^s 64 ^s 1 ^s 99	17 ^s 96 ^s 0 ^s 04	44 ^s 13 ^s 1 ^s 36
27			56 ^s 11 ^s 0 ^s 11	34 ^s 65 ^s 2 ^s 27	18 ^s 00 ^s 0 ^s 09	42 ^s 77 ^s 1 ^s 40
37				32 ^s 38 ^s	18 ^s 09 ^s	41 ^s 37 ^s

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	γ AQUILÆ.		α AQUILÆ. (Altair)		β AQUILÆ.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec.
	^h 19 ^m 38	^o 10 ['] 12	^h 19 ^m 42	^o 8 ['] 26	^h 19 ^m 47	^o 6
Jan. 1	28° 73' 0.07	69° 38' 1.78	47° 92' 0.08	25° 56' 1.67	16° 54' 0.08	10° 13'
11	28° 80' 0.12	67° 60' 1.93	48° 00' 0.12	23° 89' 1.81	16° 62' 0.12	8° 35'
21	28° 92' 0.16	65° 67' 1.65	48° 12' 0.15	22° 08' 1.54	16° 74' 0.14	6° 39'
31	29° 08' 0.19	64° 02' 1.47	48° 27' 0.18	20° 54' 1.38	16° 88' 0.18	5° 55'
Feb. 10	29° 27' 0.21	62° 55' 1.24	48° 45' 0.21	19° 16' 1.14	17° 06' 0.20	4° 27'
20	29° 48' 0.23	61° 31' 0.93	48° 66' 0.23	18° 02' 0.87	17° 26' 0.23	3° 23'
Mar. 2	29° 71' 0.25	60° 38' 0.60	48° 89' 0.26	17° 15' 0.54	17° 49' 0.25	2° 46'
12	29° 96' 0.28	59° 78' 0.21	49° 15' 0.27	16° 61' 0.15	17° 74' 0.27	2° 00'
22	30° 24' 0.29	59° 57' 0.16	49° 42' 0.28	16° 46' 0.19	18° 01' 0.28	1° 89'
Apr. 1	30° 53' 0.30	59° 73' 0.55	49° 70' 0.30	16° 65' 0.58	18° 29' 0.30	2° 13'
11	30° 83' 0.30	60° 28' 0.93	50° 00' 0.30	17° 23' 0.91	18° 59' 0.30	2° 72'
21	31° 13' 0.30	61° 21' 1.26	50° 30' 0.31	18° 14' 1.25	18° 89' 0.30	3° 63'
May 1	31° 43' 0.30	62° 47' 1.54	50° 61' 0.30	19° 39' 1.52	19° 19' 0.30	4° 84'
11	31° 73' 0.28	64° 01' 1.78	50° 91' 0.29	20° 91' 1.74	19° 49' 0.29	6° 31'
21	32° 01' 0.27	65° 79' 1.95	51° 20' 0.27	22° 65' 1.89	19° 78' 0.27	7° 98'
31	32° 28' 0.24	67° 74' 2.05	51° 47' 0.25	24° 54' 2.00	20° 05' 0.25	9° 79'
June 10	32° 52' 0.22	69° 79' 2.11	51° 72' 0.22	26° 54' 2.04	20° 30' 0.23	11° 69'
20	32° 74' 0.18	71° 90' 2.09	51° 94' 0.18	28° 58' 2.03	20° 53' 0.19	13° 69'
30	32° 92' 0.14	73° 99' 2.04	52° 12' 0.15	30° 61' 1.95	20° 72' 0.16	15° 53'
July 10	33° 06' 0.10	76° 03' 1.91	52° 27' 0.11	32° 56' 1.85	20° 88' 0.11	17° 36'
20	33° 16' 0.06	77° 94' 1.78	52° 38' 0.06	34° 41' 1.69	20° 99' 0.07	19° 08'
30	33° 22' 0.01	79° 72' 1.58	52° 44' 0.02	36° 10' 1.51	21° 06' 0.02	20° 65'
Aug. 9	33° 23' 0.03	81° 30' 1.38	52° 46' 0.03	37° 61' 1.31	21° 08' 0.02	22° 04'
19	33° 20' 0.07	82° 68' 1.15	52° 43' 0.06	38° 92' 1.09	21° 06' 0.06	23° 23'
29	33° 13' 0.11	83° 83' 0.91	52° 37' 0.10	40° 01' 0.85	21° 00' 0.09	24° 20'
Sept. 8	33° 02' 0.13	84° 74' 0.65	52° 27' 0.13	40° 86' 0.61	20° 91' 0.13	24° 96'
18	32° 89' 0.15	85° 39' 0.40	52° 14' 0.15	41° 47' 0.38	20° 78' 0.14	25° 50'
28	32° 74' 0.17	85° 79' 0.12	51° 99' 0.15	41° 85' 0.11	20° 64' 0.16	25° 80'
Oct. 8	32° 57' 0.16	85° 91' 0.12	51° 84' 0.17	41° 96' 0.12	20° 48' 0.16	25° 88'
18	32° 41' 0.16	85° 79' 0.39	51° 67' 0.16	41° 84' 0.37	20° 32' 0.16	25° 73'
28	32° 25' 0.15	85° 40' 0.65	51° 51' 0.14	41° 47' 0.61	20° 16' 0.14	25° 36'
Nov. 7	32° 10' 0.12	84° 75' 0.90	51° 37' 0.11	40° 86' 0.85	20° 02' 0.11	24° 77'
17	31° 98' 0.09	83° 85' 1.14	51° 26' 0.09	40° 01' 1.07	19° 91' 0.09	23° 98'
27	31° 89' 0.05	82° 71' 1.34	51° 17' 0.06	38° 94' 1.25	19° 82' 0.06	22° 98'
Dec. 7	31° 84' 0.02	81° 37' 1.52	51° 11' 0.02	37° 69' 1.42	19° 76' 0.02	21° 82'
17	31° 82' 0.02	79° 85' 1.65	51° 09' 0.02	36° 27' 1.55	19° 74' 0.01	20° 51'
27	31° 84' 0.05	78° 20' 1.72	51° 11' 0.06	34° 72' 1.63	19° 75' 0.06	19° 08'
37	31° 89' 0.05	76° 48' 1.72	51° 17' 0.06	33° 09' 1.72	19° 81' 0.06	17°

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α^* CAPRICORN.		α Pavonis.	
	R. A.	Dec. South.	R. A.	Dec. South.
	^h 20	^o 13	^h 20	^o 57
Jan. 1	^m 8 ^s 58 ["] 46 ["] 0 ["] 08	^m 2 ^s 48 ["] 76 ["] 0 ["] 35	^m 12 ^s 39 ["] 69 ["] 0 ["] 08	^m 15 ^s 13 ["] 90 ["] 2 ["] 23
11	58 54 0 ["] 11	49 11 0 ["] 28	39 77 0 ["] 14	11 67 2 ["] 35
21	* 58 65 0 ["] 14	49 39 0 ["] 24	* 39 91 0 ["] 23	9 32 2 ["] 62
31	58 79 0 ["] 17	49 63 0 ["] 08	40 14 0 ["] 28	6 70 2 ["] 37
Feb. 10	58 96 0 ["] 20	49 71 0 ["] 04	40 42 0 ["] 33	4 33 2 ["] 32
20	59 16 0 ["] 22	49 67 0 ["] 21	40 75 0 ["] 38	15 2 01 2 ["] 20
Mar. 2	59 38 0 ["] 25	49 46 0 ["] 40	41 13 0 ["] 42	14 59 81 2 ["] 06
12	59 63 0 ["] 27	49 06 0 ["] 56	41 55 0 ["] 46	57 75 1 ["] 87
22	8 59 90 0 ["] 29	48 50 0 ["] 74	42 01 0 ["] 49	55 88 1 ["] 64
Apr. 1	9 0 19 0 ["] 30	47 76 0 ["] 93	42 50 0 ["] 51	54 24 1 ["] 39
11	0 49 0 ["] 31	46 83 1 ["] 06	43 01 0 ["] 53	52 85 1 ["] 10
21	0 80 0 ["] 32	45 77 1 ["] 18	43 54 0 ["] 54	51 75 0 ["] 81
May 1	1 12 0 ["] 32	44 59 1 ["] 24	44 08 0 ["] 53	50 94 0 ["] 47
11	1 44 0 ["] 32	43 35 1 ["] 30	44 61 0 ["] 53	50 47 0 ["] 14
21	1 76 0 ["] 30	42 05 1 ["] 29	45 14 0 ["] 49	50 33 0 ["] 22
31	2 06 0 ["] 28	40 76 1 ["] 24	45 63 0 ["] 47	50 55 0 ["] 55
June 10	2 34 0 ["] 26	39 52 1 ["] 16	46 10 0 ["] 43	51 10 0 ["] 89
20	2 60 0 ["] 23	38 36 1 ["] 04	46 53 0 ["] 37	51 99 1 ["] 20
30	2 83 0 ["] 19	37 32 0 ["] 90	46 90 0 ["] 31	53 19 1 ["] 47
July 10	3 02 0 ["] 14	36 42 0 ["] 74	47 21 0 ["] 23	54 66 1 ["] 69
20	3 16 0 ["] 10	35 68 0 ["] 57	47 44 0 ["] 16	56 35 1 ["] 87
30	3 26 0 ["] 06	35 11 0 ["] 41	47 60 0 ["] 08	14 58 22 1 ["] 97
Aug. 9	3 32 0 ["] 01	34 70 0 ["] 25	47 68 0 ["] 00	15 0 19 2 ["] 00
19	3 33 0 ["] 03	34 45 0 ["] 10	47 68 0 ["] 07	2 19 1 ["] 97
29	3 30 0 ["] 07	34 35 0 ["] 03	47 61 0 ["] 14	4 16 1 ["] 84
Sept. 8	3 23 0 ["] 10	34 38 0 ["] 13	47 47 0 ["] 21	6 00 1 ["] 64
18	3 13 0 ["] 13	34 51 0 ["] 21	47 26 0 ["] 25	7 64 1 ["] 37
28	3 00 0 ["] 15	34 72 0 ["] 29	47 01 0 ["] 29	9 01 1 ["] 03
Oct. 8	2 85 0 ["] 15	35 01 0 ["] 32	46 72 0 ["] 31	10 04 0 ["] 67
18	2 70 0 ["] 15	35 7 0 ["] 36	46 41 0 ["] 30	10 71 0 ["] 25
28	2 55 0 ["] 14	35 0 0 ["] 34	46 11 0 ["] 30	10 96 0 ["] 19
Nov. 7	2 41 0 ["] 12	36 0 0 ["] 37	45 81 0 ["] 26	10 77 0 ["] 60
17	2 29 0 ["] 10	36 1 0 ["] 39	45 55 0 ["] 22	10 17 1 ["] 01
27	2 11 0 ["] 9	36 2 0 ["] 39	45 33 0 ["] 16	9 16 1 ["] 38
Dec. 7		36 3 0 ["] 39	45 17 0 ["] 10	7 78 1 ["] 71
17		36 4 0 ["] 39	45 07 0 ["] 03	6 07 1 ["] 96
27		36 5 0 ["] 39	45 04 0 ["] 05	4 11 2 ["] 18
37	9	36 6 0 ["] 39	12 45 09	15 1 93

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	λ Ursæ Minoris.			α CYGNI.		
	R. A.		Dec. North.	R. A.		Dec. North.
	^h 20		^o 88	^h 20		^o 44
	^m 23	^s 5	["] 38	^m 35	^s 50	["] 32
Jan. 1	23	5	38	35	50	32
11	22	59	82	50	27	0
21	22	56	24	50	28	0
31	22	54	67	50	35	0
			0			0
Feb. 10	22	55	50	50	46	0
20	22	58	34	50	62	0
Mar. 2	23	3	06	50	82	0
12	23	9	47	51	07	0
			7			0
Apr. 1	23	17	24	51	36	0
11	23	26	04	51	68	0
21	23	35	52	52	03	0
31	23	45	28	52	40	0
			9			0
May 1	23	54	99	52	77	0
11	24	4	27	53	14	0
21	24	12	80	53	50	0
31	24	20	30	53	85	0
			6			0
June 10	24	26	54	54	17	0
20	24	31	33	54	46	0
30	24	34	55	54	70	0
July 10	24	36	07	54	89	0
			0			0
20	24	35	92	55	02	0
30	24	34	04	55	10	0
Aug. 9	24	30	49	55	13	0
19	24	25	35	55	09	0
			6			0
29	24	18	68	55	01	0
Sept. 8	24	10	61	54	88	0
18	24	1	29	54	70	0
28	23	51	00	54	49	0
			11			0
Oct. 8	23	39	89	54	25	0
18	23	28	16	53	99	0
28	23	15	98	53	73	0
Nov. 7	23	3	71	53	47	0
			12			0
17	22	51	64	53	23	0
27	22	40	09	53	01	0
Dec. 7	22	29	34	52	82	0
17	22	19	74	52	66	0
			8			0
27	22	11	56	52	55	0
37	22	5	05	35	52	48
			49			42
			20			13
			70			07

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	61 ¹ CYGNI.		ζ Cygni.		α CEPHEI.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	20 ^h 59 ^m	37 ^o 56 ⁱ	21 ^h 5 ^m	29 ^o 33 ⁱ	21 ^h 14 ^m	61 ^o 53 ⁱ
Jan. 1	34 ^s 12 ^s 0 ^s 05	66 ^s 04 ^s 2 ^s 40	58 ^s 25 ^s 0 ^s 03	40 ^s 94 ^s 2 ^s 20	37 ^s 74 ^s 0 ^s 21	50 ^s 77 ^s 2 ^s 71
11	34 ^s 07 ^s 0 ^s 01	63 ^s 64 ^s 2 ^s 56	58 ^s 22 ^s 0 ^s 00	38 ^s 74 ^s 2 ^s 32	37 ^s 53 ^s 0 ^s 13	48 ^s 06 ^s 2 ^s 98
21	34 ^s 08 ^s 0 ^s 05	61 ^s 08 ^s 2 ^s 60	58 ^s 22 ^s 0 ^s 04	36 ^s 42 ^s 2 ^s 36	37 ^s 40 ^s 0 ^s 06	45 ^s 08 ^s 3 ^s 18
31	34 ^s 13 ^s 0 ^s 10	58 ^s 48 ^s 2 ^s 81	58 ^s 26 ^s 0 ^s 09	34 ^s 06 ^s 2 ^s 51	37 ^s 34 ^s 0 ^s 03	41 ^s 90 ^s 3 ^s 54
Feb. 10	34 ^s 23 ^s 0 ^s 14	55 ^s 67 ^s 2 ^s 36	58 ^s 35 ^s 0 ^s 12	31 ^s 55 ^s 2 ^s 11	37 ^s 37 ^s 0 ^s 11	38 ^s 36 ^s 3 ^s 13
20	34 ^s 37 ^s 0 ^s 18	53 ^s 31 ^s 2 ^s 10	58 ^s 47 ^s 0 ^s 16	29 ^s 44 ^s 1 ^s 85	37 ^s 48 ^s 0 ^s 19	35 ^s 23 ^s 2 ^s 92
Mar. 2	34 ^s 55 ^s 0 ^s 22	51 ^s 21 ^s 1 ^s 72	58 ^s 63 ^s 0 ^s 20	27 ^s 59 ^s 1 ^s 50	37 ^s 67 ^s 0 ^s 27	32 ^s 31 ^s 2 ^s 57
12	34 ^s 77 ^s 0 ^s 26	49 ^s 49 ^s 1 ^s 28	58 ^s 83 ^s 0 ^s 23	26 ^s 09 ^s 1 ^s 09	37 ^s 94 ^s 0 ^s 34	29 ^s 74 ^s 2 ^s 15
22	35 ^s 03 ^s 0 ^s 29	48 ^s 21 ^s 0 ^s 79	59 ^s 06 ^s 0 ^s 26	25 ^s 00 ^s 0 ^s 62	38 ^s 28 ^s 0 ^s 40	27 ^s 59 ^s 1 ^s 64
Apr. 1	35 ^s 32 ^s 0 ^s 32	47 ^s 42 ^s 0 ^s 25	59 ^s 32 ^s 0 ^s 29	24 ^s 38 ^s 0 ^s 12	38 ^s 68 ^s 0 ^s 45	25 ^s 95 ^s 1 ^s 07
11	35 ^s 64 ^s 0 ^s 34	47 ^s 17 ^s 0 ^s 29	59 ^s 61 ^s 0 ^s 31	24 ^s 26 ^s 0 ^s 37	39 ^s 13 ^s 0 ^s 48	24 ^s 88 ^s 0 ^s 46
21	35 ^s 98 ^s 0 ^s 36	47 ^s 46 ^s 0 ^s 85	59 ^s 92 ^s 0 ^s 32	24 ^s 63 ^s 0 ^s 85	39 ^s 61 ^s 0 ^s 51	24 ^s 42 ^s 0 ^s 15
May 1	36 ^s 34 ^s 0 ^s 36	48 ^s 31 ^s 1 ^s 37	60 ^s 24 ^s 0 ^s 33	25 ^s 48 ^s 1 ^s 32	40 ^s 12 ^s 0 ^s 52	24 ^s 57 ^s 0 ^s 78
11	36 ^s 70 ^s 0 ^s 36	49 ^s 68 ^s 1 ^s 84	60 ^s 57 ^s 0 ^s 33	26 ^s 80 ^s 1 ^s 75	40 ^s 64 ^s 0 ^s 51	25 ^s 35 ^s 1 ^s 37
21	37 ^s 06 ^s 0 ^s 35	51 ^s 52 ^s 2 ^s 25	60 ^s 90 ^s 0 ^s 33	28 ^s 55 ^s 2 ^s 11	41 ^s 15 ^s 0 ^s 49	26 ^s 72 ^s 1 ^s 90
31	37 ^s 41 ^s 0 ^s 33	53 ^s 77 ^s 2 ^s 62	61 ^s 23 ^s 0 ^s 31	30 ^s 66 ^s 2 ^s 42	41 ^s 64 ^s 0 ^s 46	28 ^s 62 ^s 2 ^s 38
June 10	37 ^s 74 ^s 0 ^s 30	56 ^s 39 ^s 2 ^s 90	61 ^s 54 ^s 0 ^s 28	33 ^s 08 ^s 2 ^s 65	42 ^s 10 ^s 0 ^s 41	31 ^s 00 ^s 2 ^s 80
20	38 ^s 04 ^s 0 ^s 27	59 ^s 29 ^s 3 ^s 09	61 ^s 82 ^s 0 ^s 25	35 ^s 73 ^s 2 ^s 81	42 ^s 51 ^s 0 ^s 35	33 ^s 80 ^s 3 ^s 13
30	38 ^s 31 ^s 0 ^s 22	62 ^s 38 ^s 3 ^s 21	62 ^s 07 ^s 0 ^s 22	38 ^s 54 ^s 2 ^s 91	42 ^s 86 ^s 0 ^s 29	36 ^s 93 ^s 3 ^s 38
July 10	38 ^s 53 ^s 0 ^s 18	65 ^s 59 ^s 3 ^s 27	62 ^s 29 ^s 0 ^s 18	41 ^s 45 ^s 2 ^s 92	43 ^s 15 ^s 0 ^s 21	40 ^s 31 ^s 3 ^s 54
20	38 ^s 71 ^s 0 ^s 13	68 ^s 86 ^s 3 ^s 25	62 ^s 47 ^s 0 ^s 13	44 ^s 37 ^s 2 ^s 88	43 ^s 36 ^s 0 ^s 14	43 ^s 85 ^s 3 ^s 64
30	38 ^s 84 ^s 0 ^s 07	72 ^s 11 ^s 3 ^s 16	62 ^s 60 ^s 0 ^s 08	47 ^s 25 ^s 2 ^s 77	43 ^s 50 ^s 0 ^s 05	47 ^s 49 ^s 3 ^s 64
Aug. 9	38 ^s 91 ^s 0 ^s 02	75 ^s 27 ^s 3 ^s 00	62 ^s 68 ^s 0 ^s 03	50 ^s 02 ^s 2 ^s 60	43 ^s 55 ^s 0 ^s 02	51 ^s 13 ^s 3 ^s 58
19	38 ^s 93 ^s 0 ^s 02	78 ^s 27 ^s 2 ^s 79	62 ^s 71 ^s 0 ^s 02	52 ^s 62 ^s 2 ^s 39	43 ^s 53 ^s 0 ^s 10	54 ^s 71 ^s 3 ^s 44
29	38 ^s 91 ^s 0 ^s 08	81 ^s 06 ^s 2 ^s 52	62 ^s 69 ^s 0 ^s 05	55 ^s 01 ^s 2 ^s 13	43 ^s 43 ^s 0 ^s 18	58 ^s 15 ^s 3 ^s 22
Sept. 8	38 ^s 83 ^s 0 ^s 12	83 ^s 58 ^s 2 ^s 21	62 ^s 64 ^s 0 ^s 10	57 ^s 14 ^s 1 ^s 85	43 ^s 25 ^s 0 ^s 24	61 ^s 37 ^s 2 ^s 92
18	38 ^s 71 ^s 0 ^s 15	85 ^s 79 ^s 1 ^s 87	62 ^s 54 ^s 0 ^s 13	58 ^s 99 ^s 1 ^s 51	43 ^s 01 ^s 0 ^s 30	64 ^s 29 ^s 2 ^s 57
28	38 ^s 56 ^s 0 ^s 17	87 ^s 66 ^s 1 ^s 49	62 ^s 41 ^s 0 ^s 16	60 ^s 50 ^s 1 ^s 16	42 ^s 71 ^s 0 ^s 35	66 ^s 86 ^s 2 ^s 18
Oct. 8	38 ^s 39 ^s 0 ^s 19	89 ^s 15 ^s 1 ^s 03	62 ^s 25 ^s 0 ^s 18	61 ^s 66 ^s 0 ^s 80	42 ^s 36 ^s 0 ^s 38	69 ^s 04 ^s 1 ^s 72
18	38 ^s 20 ^s 0 ^s 21	90 ^s 18 ^s 0 ^s 61	62 ^s 07 ^s 0 ^s 21	62 ^s 46 ^s 0 ^s 38	41 ^s 98 ^s 0 ^s 41	70 ^s 76 ^s 1 ^s 21
28	37 ^s 99 ^s 0 ^s 21	90 ^s 79 ^s 0 ^s 16	61 ^s 90 ^s 0 ^s 24	63 ^s 84 ^s 0 ^s 00	41 ^s 57 ^s 0 ^s 43	71 ^s 97 ^s 0 ^s 69
Nov. 7	37 ^s 78 ^s 0 ^s 20	90 ^s 25 ^s 0 ^s 3	61 ^s 72 ^s 0 ^s 27	64 ^s 84 ^s 0 ^s 41	41 ^s 14 ^s 0 ^s 41	72 ^s 66 ^s 0 ^s 12
17	37 ^s 58 ^s 0 ^s 18	90 ^s 68 ^s 0 ^s 1	61 ^s 54 ^s 0 ^s 30	65 ^s 43 ^s 0 ^s 82	40 ^s 73 ^s 0 ^s 41	72 ^s 78 ^s 0 ^s 46
27	37 ^s 40 ^s 0 ^s 15	88 ^s 68 ^s 0 ^s 1	61 ^s 36 ^s 0 ^s 33	66 ^s 11 ^s 1 ^s 18	40 ^s 32 ^s 0 ^s 38	72 ^s 32 ^s 1 ^s 02
Dec. 7	37 ^s 25 ^s 0 ^s 13	87 ^s 68 ^s 0 ^s 10	61 ^s 18 ^s 0 ^s 36	67 ^s 43 ^s 1 ^s 54	39 ^s 94 ^s 0 ^s 35	71 ^s 30 ^s 1 ^s 56
17	37 ^s 12 ^s 0 ^s 10	87 ^s 68 ^s 0 ^s 10	60 ^s 59 ^s 0 ^s 39	68 ^s 89 ^s 1 ^s 84	39 ^s 59 ^s 0 ^s 29	69 ^s 74 ^s 2 ^s 06
27	37 ^s 02 ^s 0 ^s 08	85 ^s 68 ^s 0 ^s 10	60 ^s 41 ^s 0 ^s 42	69 ^s 05 ^s 1 ^s 98	39 ^s 30 ^s 0 ^s 24	67 ^s 68 ^s 2 ^s 49
37	36 ^s 97 ^s 0 ^s 05	83 ^s 68 ^s 0 ^s 10	60 ^s 23 ^s 0 ^s 45	69 ^s 07 ^s 1 ^s 98	39 ^s 06 ^s 0 ^s 24	65 ^s 19 ^s 2 ^s 49

APPARENT PLACES OF THE PRINCIPAL FIXED STARS
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	β AQUARI.			β CEPHEI.			ϵ PEGASI.		
	R. A.		Dec. South.	R. A.		Dec. North.	R. A.		Dec.
	^h 21	^m 22	^o 6 ['] 16	^h 21	^m 26	^o 69 ['] 50	^h 21	^m 36	^o 9
Jan. 1	56 ^s 81	0 ^s 00	72 ^s 60	27 ^s 71	0 ^s 35	50 ^s 85	9 ^s 27	0 ^s 03	46 ^s 61
11	56 ^s 81	0 ^s 03	73 ^s 18	27 ^s 36	0 ^s 26	48 ^s 27	9 ^s 24	0 ^s 00	45 ^s 31
21	56 ^s 84	0 ^s 05	73 ^s 70	27 ^s 10	0 ^s 16	45 ^s 36	9 ^s 24	0 ^s 04	44 ^s 01
31	56 ^s 89	0 ^s 09	74 ^s 12	26 ^s 94	0 ^s 04	42 ^s 20	9 ^s 28	0 ^s 06	42 ^s 71
Feb. 10	56 ^s 98	0 ^s 13	74 ^s 42	26 ^s 90	0 ^s 09	38 ^s 94	9 ^s 34	0 ^s 10	41 ^s 61
20	57 ^s 11	0 ^s 15	74 ^s 55	26 ^s 99	0 ^s 20	35 ^s 37	9 ^s 44	0 ^s 14	40 ^s 48
Mar. 2	57 ^s 26	0 ^s 18	74 ^s 47	27 ^s 19	0 ^s 31	32 ^s 32	9 ^s 58	0 ^s 16	39 ^s 70
12	57 ^s 44	0 ^s 21	74 ^s 17	27 ^s 50	0 ^s 41	29 ^s 53	9 ^s 74	0 ^s 19	39 ^s 17
22	57 ^s 65	0 ^s 24	73 ^s 63	27 ^s 91	0 ^s 50	27 ^s 14	9 ^s 93	0 ^s 23	38 ^s 96
Apr. 1	57 ^s 89	0 ^s 26	72 ^s 84	28 ^s 41	0 ^s 56	25 ^s 25	10 ^s 16	0 ^s 25	39 ^s 09
11	58 ^s 15	0 ^s 28	71 ^s 82	28 ^s 97	0 ^s 63	23 ^s 90	10 ^s 41	0 ^s 28	39 ^s 56
21	58 ^s 43	0 ^s 30	70 ^s 58	29 ^s 60	0 ^s 67	23 ^s 15	10 ^s 69	0 ^s 29	40 ^s 36
May 1	58 ^s 73	0 ^s 32	69 ^s 15	30 ^s 27	0 ^s 67	23 ^s 02	10 ^s 98	0 ^s 31	41 ^s 55
11	59 ^s 05	0 ^s 32	67 ^s 56	30 ^s 94	0 ^s 66	23 ^s 52	11 ^s 29	0 ^s 31	43 ^s 01
21	59 ^s 37	0 ^s 32	65 ^s 87	31 ^s 60	0 ^s 64	24 ^s 62	11 ^s 60	0 ^s 32	44 ^s 78
31	59 ^s 69	0 ^s 31	64 ^s 12	32 ^s 24	0 ^s 60	26 ^s 28	11 ^s 92	0 ^s 31	46 ^s 63
June 10	60 ^s 00	0 ^s 29	62 ^s 34	32 ^s 84	0 ^s 54	28 ^s 46	12 ^s 23	0 ^s 29	48 ^s 74
20	60 ^s 29	0 ^s 27	60 ^s 61	33 ^s 38	0 ^s 46	31 ^s 08	12 ^s 52	0 ^s 27	50 ^s 94
30	60 ^s 56	0 ^s 24	58 ^s 96	33 ^s 84	0 ^s 37	34 ^s 09	12 ^s 79	0 ^s 24	53 ^s 16
July 10	60 ^s 80	0 ^s 21	57 ^s 44	34 ^s 21	0 ^s 28	37 ^s 39	13 ^s 03	0 ^s 21	55 ^s 36
20	61 ^s 01	0 ^s 16	56 ^s 07	34 ^s 49	0 ^s 17	40 ^s 90	13 ^s 24	0 ^s 17	57 ^s 50
30	61 ^s 17	0 ^s 12	54 ^s 89	34 ^s 66	0 ^s 07	44 ^s 57	13 ^s 41	0 ^s 12	59 ^s 52
Aug. 9	61 ^s 29	0 ^s 08	53 ^s 90	34 ^s 73	0 ^s 04	48 ^s 29	13 ^s 53	0 ^s 08	61 ^s 39
19	61 ^s 37	0 ^s 03	53 ^s 13	34 ^s 69	0 ^s 14	51 ^s 98	13 ^s 61	0 ^s 04	63 ^s 07
29	61 ^s 40	0 ^s 01	52 ^s 56	34 ^s 55	0 ^s 24	55 ^s 59	13 ^s 65	0 ^s 01	64 ^s 54
Sept. 8	61 ^s 39	0 ^s 04	52 ^s 19	34 ^s 31	0 ^s 32	59 ^s 00	13 ^s 64	0 ^s 04	65 ^s 79
18	61 ^s 35	0 ^s 11	52 ^s 01	33 ^s 99	0 ^s 48	62 ^s 16	13 ^s 60	0 ^s 10	66 ^s 80
28	61 ^s 27	0 ^s 12	52 ^s 00	33 ^s 58	0 ^s 53	65 ^s 01	13 ^s 52	0 ^s 12	67 ^s 56
Oct. 8	61 ^s 16	0 ^s 12	52 ^s 14	33 ^s 10	0 ^s 58	67 ^s 48	13 ^s 42	0 ^s 13	68 ^s 08
18	61 ^s 04	0 ^s 13	52 ^s 40	32 ^s 57	0 ^s 60	69 ^s 52	13 ^s 30	0 ^s 14	68 ^s 36
28	60 ^s 90	0 ^s 13	52 ^s 76	31 ^s 99	0 ^s 61	71 ^s 07	13 ^s 17	0 ^s 13	68 ^s 39
Nov. 7	60 ^s 77	0 ^s 13	53 ^s 20	31 ^s 39	0 ^s 45	72 ^s 07	13 ^s 03	0 ^s 13	68 ^s 21
17	60 ^s 64	0 ^s 12	53 ^s 71	30 ^s 78	0 ^s 36	72 ^s 52	12 ^s 90	0 ^s 12	67 ^s 82
27	60 ^s 52	0 ^s 09	54 ^s 27	30 ^s 18	0 ^s 57	72 ^s 38	12 ^s 78	0 ^s 11	67 ^s 19
Dec. 7	60 ^s 43	0 ^s 07	54 ^s 87	29 ^s 61	0 ^s 52	71 ^s 62	12 ^s 67	0 ^s 07	66 ^s 38
17	60 ^s 36	0 ^s 05	55 ^s 48	29 ^s 09	0 ^s 47	70 ^s 29	12 ^s 58	0 ^s 03	65 ^s 41
27	60 ^s 31	0 ^s 02	56 ^s 09	28 ^s 63	0 ^s 40	68 ^s 43	12 ^s 51	0 ^s 03	64 ^s 64
37	60 ^s 29	0 ^s 02	56 ^s 67	28 ^s 22	0 ^s 33	66 ^s 10	12 ^s 48	0 ^s 03	63 ^s 63

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α AQUARI.		α GRUIS.		ζ PEGASI.	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. North.
	^h 21 ^m 57	^o 1 ⁱ 6	^h 21 ^m 57	^o 47 ⁱ 44	^h 22 ^m 33	^o 9 ⁱ 58
n. 1	23 ^s 20 ^s	38 ^h 46 ^h	53 ^s 87 ^s	67 ^h 31 ^h	18 ^s 67 ^s	53 ^h 25 ^h
11	23 ^h 16 ^h 0 ^m 04	39 ^h 23 ^h 0 ^m 77	53 ^h 80 ^h 0 ^m 07	65 ^h 83 ^h 1 ^m 48	18 ^h 60 ^h 0 ^m 07	52 ^h 15 ^h 1 ^m 10
21	23 ^h 16 ^h 0 ^m 00	39 ^h 96 ^h 0 ^m 73	53 ^h 77 ^h 0 ^m 03	64 ^h 07 ^h 1 ^m 76	18 ^h 56 ^h 0 ^m 04	51 ^h 03 ^h 1 ^m 12
31	23 ^h 18 ^h 0 ^m 02	40 ^h 61 ^h 0 ^m 65	53 ^h 79 ^h 0 ^m 02	62 ^h 03 ^h 2 ^m 04	18 ^h 54 ^h 0 ^m 02	49 ^h 89 ^h 1 ^m 14
	0 ^m 05	0 ^m 52	0 ^m 07	2 ^m 23	0 ^m 01	1 ^m 06
b. 10	23 ^h 23 ^h	41 ^h 13 ^h	53 ^h 86 ^h	59 ^h 80 ^h	18 ^h 55 ^h	48 ^h 83 ^h
20	23 ^h 31 ^h 0 ^m 08	41 ^h 54 ^h 0 ^m 41	53 ^h 98 ^h 0 ^m 12	57 ^h 16 ^h 2 ^m 64	18 ^h 59 ^h 0 ^m 04	47 ^h 87 ^h 0 ^m 96
ar. 2	23 ^h 43 ^h 0 ^m 12	41 ^h 70 ^h 0 ^m 16	54 ^h 14 ^h 0 ^m 16	54 ^h 65 ^h 2 ^m 51	18 ^h 67 ^h 0 ^m 08	47 ^h 01 ^h 0 ^m 86
12	23 ^h 57 ^h 0 ^m 14	41 ^h 61 ^h 0 ^m 09	54 ^h 35 ^h 0 ^m 21	52 ^h 07 ^h 2 ^m 58	18 ^h 77 ^h 0 ^m 10	46 ^h 49 ^h 0 ^m 52
	0 ^m 18	0 ^m 34	0 ^m 25	2 ^m 59	0 ^m 14	0 ^m 26
22	23 ^h 75 ^h	41 ^h 27 ^h	54 ^h 60 ^h	49 ^h 48 ^h	18 ^h 91 ^h	46 ^h 23 ^h
pr. 1	23 ^h 96 ^h 0 ^m 21	40 ^h 66 ^h 0 ^m 61	54 ^h 89 ^h 0 ^m 29	46 ^h 93 ^h 2 ^m 55	19 ^h 09 ^h 0 ^m 18	46 ^h 28 ^h 0 ^m 05
11	24 ^h 20 ^h 0 ^m 24	39 ^h 78 ^h 0 ^m 88	55 ^h 22 ^h 0 ^m 33	44 ^h 47 ^h 2 ^m 46	19 ^h 30 ^h 0 ^m 21	46 ^h 66 ^h 0 ^m 38
21	24 ^h 46 ^h 0 ^m 26	38 ^h 63 ^h 1 ^m 15	55 ^h 59 ^h 0 ^m 37	42 ^h 14 ^h 2 ^m 33	19 ^h 55 ^h 0 ^m 25	47 ^h 38 ^h 0 ^m 72
	0 ^m 29	1 ^m 39	0 ^m 40	2 ^m 15	0 ^m 27	1 ^m 05
ay 1	24 ^h 75 ^h	37 ^h 24 ^h	55 ^h 99 ^h	39 ^h 99 ^h	19 ^h 82 ^h	48 ^h 43 ^h
11	25 ^h 05 ^h 0 ^m 30	35 ^h 65 ^h 1 ^m 59	56 ^h 41 ^h 0 ^m 42	38 ^h 08 ^h 1 ^m 91	20 ^h 11 ^h 0 ^m 29	49 ^h 79 ^h 1 ^m 36
21	25 ^h 37 ^h 0 ^m 32	33 ^h 88 ^h 1 ^m 77	56 ^h 85 ^h 0 ^m 44	36 ^h 44 ^h 1 ^m 64	20 ^h 42 ^h 0 ^m 31	51 ^h 42 ^h 1 ^m 63
31	25 ^h 69 ^h 0 ^m 32	31 ^h 99 ^h 1 ^m 89	57 ^h 29 ^h 0 ^m 44	35 ^h 13 ^h 1 ^m 31	20 ^h 74 ^h 0 ^m 32	53 ^h 29 ^h 1 ^m 87
	0 ^m 32	1 ^m 96	0 ^m 44	0 ^m 96	0 ^m 33	2 ^m 04
me 10	26 ^h 01 ^h 0 ^m 30	30 ^h 03 ^h 1 ^m 97	57 ^h 73 ^h 0 ^m 42	34 ^h 17 ^h 0 ^m 61	21 ^h 07 ^h 0 ^m 32	55 ^h 33 ^h 2 ^m 17
20	26 ^h 31 ^h 0 ^m 29	28 ^h 06 ^h 1 ^m 93	58 ^h 15 ^h 0 ^m 40	33 ^h 56 ^h 0 ^m 21	21 ^h 39 ^h 0 ^m 30	57 ^h 50 ^h 2 ^m 25
30	26 ^h 60 ^h 0 ^m 26	26 ^h 13 ^h 1 ^m 85	58 ^h 55 ^h 0 ^m 37	33 ^h 35 ^h 0 ^m 18	21 ^h 69 ^h 0 ^m 27	59 ^h 75 ^h 2 ^m 26
ly 10	26 ^h 86 ^h	24 ^h 28 ^h 1 ^m 72	58 ^h 92 ^h 0 ^m 32	33 ^h 53 ^h 0 ^m 55	21 ^h 96 ^h 0 ^m 25	62 ^h 01 ^h 2 ^m 22
	0 ^m 23	1 ^m 72	0 ^m 32	0 ^m 55	0 ^m 25	2 ^m 22
20	27 ^h 09 ^h 0 ^m 19	22 ^h 56 ^h 1 ^m 55	59 ^h 24 ^h 0 ^m 27	34 ^h 08 ^h 0 ^m 92	22 ^h 21 ^h 0 ^m 22	64 ^h 23 ^h 2 ^m 13
30	27 ^h 28 ^h 0 ^m 15	21 ^h 01 ^h 1 ^m 35	59 ^h 51 ^h 0 ^m 21	35 ^h 00 ^h 1 ^m 22	22 ^h 43 ^h 0 ^m 18	66 ^h 36 ^h 1 ^m 99
ag. 9	27 ^h 43 ^h 0 ^m 10	19 ^h 66 ^h 1 ^m 15	59 ^h 72 ^h 0 ^m 15	36 ^h 22 ^h 1 ^m 49	22 ^h 61 ^h 0 ^m 13	68 ^h 35 ^h 1 ^m 82
19	27 ^h 53 ^h	18 ^h 51 ^h 0 ^m 94	59 ^h 87 ^h 0 ^m 09	37 ^h 71 ^h 1 ^m 70	22 ^h 74 ^h 0 ^m 10	70 ^h 17 ^h 1 ^m 63
	0 ^m 06	0 ^m 94	0 ^m 09	1 ^m 70	0 ^m 10	1 ^m 63
29	27 ^h 59 ^h 0 ^m 03	17 ^h 57 ^h 0 ^m 71	59 ^h 96 ^h 0 ^m 02	39 ^h 41 ^h 1 ^m 82	22 ^h 84 ^h 0 ^m 05	71 ^h 80 ^h 1 ^m 41
pt. 8	27 ^h 62 ^h 0 ^m 02	16 ^h 86 ^h 0 ^m 49	59 ^h 98 ^h 0 ^m 04	41 ^h 23 ^h 1 ^m 88	22 ^h 89 ^h 0 ^m 01	73 ^h 21 ^h 1 ^m 17
18	27 ^h 60 ^h 0 ^m 06	16 ^h 37 ^h 0 ^m 28	59 ^h 94 ^h 0 ^m 09	43 ^h 11 ^h 1 ^m 85	22 ^h 90 ^h 0 ^m 02	74 ^h 38 ^h 0 ^m 93
28	27 ^h 54 ^h	16 ^h 09 ^h 0 ^m 10	59 ^h 85 ^h 0 ^m 14	44 ^h 96 ^h 1 ^m 74	22 ^h 88 ^h 0 ^m 06	75 ^h 31 ^h 0 ^m 71
	0 ^m 08	0 ^m 10	0 ^m 14	1 ^m 74	0 ^m 06	0 ^m 71
ct. 8	27 ^h 46 ^h 0 ^m 10	15 ^h 99 ^h 0 ^m 08	59 ^h 71 ^h 0 ^m 18	46 ^h 70 ^h 1 ^m 56	22 ^h 82 ^h 0 ^m 08	76 ^h 02 ^h 0 ^m 46
18	27 ^h 36 ^h 0 ^m 12	16 ^h 07 ^h 0 ^m 22	59 ^h 53 ^h 0 ^m 20	48 ^h 26 ^h 1 ^m 30	22 ^h 74 ^h 0 ^m 10	76 ^h 48 ^h 0 ^m 21
28	27 ^h 24 ^h 0 ^m 12	16 ^h 29 ^h 0 ^m 36	59 ^h 33 ^h 0 ^m 28	49 ^h 36 ^h 0 ^m 97	22 ^h 64 ^h 0 ^m 11	76 ^h 69 ^h 0 ^m 01
ov. 7	27 ^h 12 ^h	16 ^h 65 ^h 0 ^m 47	59 ^h 12 ^h	50 ^h 33 ^h 0 ^m 61	22 ^h 53 ^h 0 ^m 12	76 ^h 68 ^h 0 ^m 21
	0 ^m 12	0 ^m 47		0 ^m 61	0 ^m 12	0 ^m 21
17	27 ^h 00 ^h	17 ^h 38 ^h	58 ^h	51 ^h 14 ^h 0 ^m 23	22 ^h 41 ^h 0 ^m 12	76 ^h 47 ^h 0 ^m 42
27	26 ^h 88 ^h 0 ^m 11			57 ^h 0 ^m 18	22 ^h 29 ^h 0 ^m 12	76 ^h 05 ^h 0 ^m 61
ec. 7	26 ^h 77 ^h 0 ^m 09			59 ^h 0 ^m 58	22 ^h 17 ^h 0 ^m 10	75 ^h 44 ^h 0 ^m 77
17	26 ^h 68 ^h			61 ^h 0 ^m 95	22 ^h 07 ^h 0 ^m 09	74 ^h 67 ^h 0 ^m 92
	0 ^m 07			66 ^h 1 ^m 31	21 ^h 98 ^h 0 ^m 08	73 ^h 75 ^h 1 ^m 03
27	26 ^h 61 ^h				21 ^h 90 ^h	72 ^h 72 ^h
37	26 ^h 57 ^h					

APPARENT PLACES OF THE PRINCIPAL FIXED STARS.
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α PISCIS AUSTRALIS. (Fomalhaut)		α PEGASI. (Markab)		δ PISCUM.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec.
	^h 22 ^m 48	[°] 30 ['] 28	^h 22 ^m 56	[°] 14 ['] 19	^h 23 ^m 31	[°] 4
Jan. 1	36° 61' 0" 0.00	78° 44' 0" 1.25	37° 51' 0" 0.02	46° 42' 0" 1.22	33° 06' 0" 0.04	32° 0'
11	36° 52' 0" 0.09	77° 98' 0" 0.46	37° 43' 0" 0.08	45° 31' 0" 1.11	32° 97' 0" 0.09	31° 0'
21	36° 47' 0" 0.05	77° 25' 0" 0.73	37° 36' 0" 0.07	44° 10' 0" 1.21	32° 89' 0" 0.08	30° 0'
31	36° 44' 0" 0.03	76° 26' 0" 0.99	37° 32' 0" 0.04	42° 86' 0" 1.24	32° 83' 0" 0.06	29° 0'
Feb. 10	36° 44' 0" 0.00	75° 01' 0" 1.49	37° 30' 0" 0.02	41° 64' 0" 1.14	32° 79' 0" 0.02	29° 0'
20	36° 47' 0" 0.03	73° 52' 0" 1.69	37° 32' 0" 0.04	40° 50' 0" 0.99	32° 77' 0" 0.02	28° 0'
Mar. 2	36° 54' 0" 0.07	71° 83' 0" 2.08	37° 36' 0" 0.09	39° 51' 0" 0.86	32° 79' 0" 0.05	28° 0'
12	36° 66' 0" 0.12	69° 75' 0" 2.05	37° 45' 0" 0.12	38° 65' 0" 0.52	32° 84' 0" 0.09	28° 0'
22	36° 81' 0" 0.15	67° 70' 0" 2.18	37° 57' 0" 0.16	38° 13' 0" 0.20	32° 93' 0" 0.13	28° 0'
Apr. 1	36° 99' 0" 0.18	65° 52' 0" 2.27	37° 73' 0" 0.19	37° 93' 0" 0.14	33° 06' 0" 0.16	28° 0'
11	37° 21' 0" 0.22	63° 25' 0" 2.31	37° 92' 0" 0.23	38° 07' 0" 0.48	33° 22' 0" 0.19	28° 0'
21	37° 47' 0" 0.26	60° 94' 0" 2.31	38° 15' 0" 0.26	38° 55' 0" 0.83	33° 41' 0" 0.23	29° 0'
May 1	37° 76' 0" 0.29	58° 63' 0" 2.27	38° 41' 0" 0.29	39° 38' 0" 1.18	33° 64' 0" 0.26	31° 0'
11	38° 08' 0" 0.32	56° 36' 0" 2.16	38° 70' 0" 0.31	40° 56' 0" 1.49	33° 90' 0" 0.29	32° 0'
21	38° 42' 0" 0.34	54° 20' 0" 2.00	39° 01' 0" 0.32	42° 05' 0" 1.76	34° 19' 0" 0.31	34° 0'
31	38° 78' 0" 0.36	52° 20' 0" 1.80	39° 33' 0" 0.32	43° 81' 0" 1.99	34° 50' 0" 0.32	35° 0'
June 10	39° 14' 0" 0.36	50° 40' 0" 1.55	39° 65' 0" 0.33	45° 80' 0" 2.17	34° 82' 0" 0.33	37° 0'
20	39° 50' 0" 0.35	48° 85' 0" 1.26	39° 98' 0" 0.31	47° 97' 0" 2.28	35° 15' 0" 0.32	40° 0'
30	39° 85' 0" 0.33	47° 59' 0" 0.94	40° 29' 0" 0.29	50° 25' 0" 2.34	35° 47' 0" 0.30	42° 0'
July 10	40° 18' 0" 0.30	46° 65' 0" 0.61	40° 58' 0" 0.27	52° 59' 0" 2.36	35° 77' 0" 0.29	44° 0'
20	40° 48' 0" 0.27	46° 04' 0" 0.27	40° 85' 0" 0.23	54° 95' 0" 2.30	36° 06' 0" 0.26	46° 0'
30	40° 75' 0" 0.23	45° 77' 0" 0.08	41° 08' 0" 0.20	57° 25' 0" 2.20	36° 32' 0" 0.23	48° 0'
Aug. 9	40° 98' 0" 0.18	45° 85' 0" 0.40	41° 28' 0" 0.16	59° 45' 0" 2.06	36° 55' 0" 0.19	50° 0'
19	41° 16' 0" 0.13	46° 25' 0" 0.69	41° 44' 0" 0.11	61° 51' 0" 1.88	36° 74' 0" 0.15	51° 0'
29	41° 29' 0" 0.08	46° 94' 0" 0.94	41° 55' 0" 0.08	63° 39' 0" 1.69	36° 89' 0" 0.11	52° 0'
Sept. 8	41° 37' 0" 0.03	47° 88' 0" 1.14	41° 63' 0" 0.03	65° 08' 0" 1.46	37° 00' 0" 0.07	54° 0'
18	41° 40' 0" 0.01	49° 02' 0" 1.29	41° 66' 0" 0.00	66° 54' 0" 1.21	37° 07' 0" 0.04	55° 0'
28	41° 39' 0" 0.05	50° 31' 0" 1.35	41° 66' 0" 0.04	67° 75' 0" 0.98	37° 11' 0" 0.00	55° 0'
Oct. 8	41° 34' 0" 0.09	51° 66' 0" 1.35	41° 62' 0" 0.06	68° 73' 0" 0.73	37° 11' 0" 0.03	56° 0'
18	41° 25' 0" 0.11	53° 01' 0" 1.29	41° 56' 0" 0.09	69° 46' 0" 0.47	37° 08' 0" 0.06	56° 0'
28	41° 14' 0" 0.13	54° 30' 0" 1.17	41° 47' 0" 0.10	69° 93' 0" 0.21	37° 02' 0" 0.07	56° 0'
Nov. 7	41° 01' 0" 0.14	55° 47' 0" 1.01	41° 37' 0" 0.11	70° 14' 0" 0.03	36° 95' 0" 0.08	56° 0'
17	40° 87' 0" 0.14	56° 48' 0" 0.78	41° 26' 0" 0.12	70° 11' 0" 0.26	36° 87' 0" 0.10	56° 0'
27	40° 73' 0" 0.14	57° 26' 0" 0.52	41° 14' 0" 0.12	69° 85' 0" 0.49	36° 77' 0" 0.11	55° 0'
Dec. 7	40° 59' 0" 0.13	57° 78' 0" 0.25	41° 02' 0" 0.11	69° 36' 0" 0.70	36° 66' 0" 0.10	55° 0'
17	40° 46' 0" 0.11	58° 03' 0" 0.03	40° 91' 0" 0.10	68° 66' 0" 0.88	36° 56' 0" 0.10	54° 0'
27	40° 35' 0" 0.09	58° 00' 0" 0.33	40° 81' 0" 0.09	67° 78' 0" 1.03	36° 46' 0" 0.09	53° 0'
37	40° 26' 0" 0.00	57° 67' 0" 0.00	40° 72' 0" 0.00	66° 75' 0" 0.00	36° 37' 0" 0.00	53° 0'

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	γ Cephei.				α ANDROMEDÆ.			
	R. A.		Dec. North.		R. A.		Dec. North.	
	^h 23	^m 32	^o 76	ⁱ 43	^h 23	^m 59	^o 28	ⁱ 11
a. 1	39 ^s ·14	^s	35 ["] ·93	["]	57 ^s ·39	^s	31 ["] ·03	["]
11	38·31	0·83	34·99	0·94	57·26	0·13	30·10	0·93
21	37·54	0·77	33·48	1·51	57·14	0·12	28·91	1·19
31	36·86	0·68	31·46	2·02	57·03	0·11	27·53	1·38
		0·56		2·45		0·09		1·51
b. 10	36·30		29·01		56·94		26·02	
20	35·88	0·42	26·24	2·77	56·88	0·06	24·46	1·56
ar. 2	35·63	0·25	23·26	2·98	56·84	0·04	22·90	1·56
12	35·55	0·08	20·20	3·06	56·85	0·01	21·44	1·46
		0·12		3·31		0·05		1·31
22	35·67		16·89		56·90		20·13	
ar. 1	35·96	0·29	14·07	2·82	*57·00	0·10	18·97	1·16
11	36·42	0·46	11·54	2·53	57·15	0·15	18·22	0·75
21	37·04	0·62	9·38	2·16	57·34	0·19	17·83	0·39
		0·74		1·70		0·23		0·02
ay 1	37·78		7·68		57·57		17·81	
11	38·63	0·85	6·52	1·16	57·84	0·27	18·18	0·37
21	39·56	0·93	5·92	0·60	58·14	0·30	18·94	0·76
31	40·54	0·98	5·89	0·03	58·47	0·33	20·08	1·14
		1·00		0·57		0·34		1·48
ne 10	41·54		6·46		58·81		21·56	
20	42·53	0·99	7·58	1·12	59·17	0·36	23·36	1·80
30	43·49	0·96	9·24	1·66	59·51	0·34	25·43	2·07
ly 10	44·38	0·89	11·40	2·16	59·85	0·34	27·71	2·28
		0·82		2·60		0·32		2·43
20	45·20		14·00		60·17		30·14	
30	45·91	0·71	16·98	2·98	60·46	0·29	32·68	2·54
ig. 9	46·51	0·60	20·26	3·28	60·72	0·26	35·26	2·58
19	46·98	0·47	23·80	3·54	60·95	0·23	37·82	2·56
		0·34		3·72		0·18		2·50
29	47·32		27·52		61·13		40·32	
pt. 8	47·51	0·19	31·33	3·81	61·27	0·14	42·72	2·40
18	47·56	0·05	35·17	3·84	61·38	0·11	44·97	2·25
28	47·48	0·08	38·95	3·78	61·45	0·07	47·03	2·06
		0·23		3·63		0·02		1·84
t. 8	47·25		42·58		61·47		48·87	
18	46·90	0·35	46·00	4·12	61·46	0·01	50·47	1·60
28	46·42	0·48	49·13	4·18	61·42	0·04	51·80	1·33
ov. 7	45·87	0·59	51·88	4·5	61·35	0·07	52·85	1·05
		0·68		3·0		0·08		0·76
17			54·18		61·27		53·61	
27					61·17	0·10	54·06	0·45
ec. 7					61·05	0·12	54·17	0·11
17					60·92	0·13	53·97	0·20
						0·13		0·50
27					57·79		53·47	
3-					55	0·14	52·68	0·79

TABLE,

Showing the *Correction* to be applied to the *preceding* Apparent Places of *Polar Stars*, for the terms of Nutation involving $2 \odot$.

Arg.	α URS. MIN.		51 Cephei.		σ Octantis.		δ URS. MIN.		λ URS. MIN.	
ζ	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.
$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$
0 180	— '211	+ '02	+ '011	+ '09	— '114	— '09	— '011	— '09	— '168	— '07
1 181	'213	'02	'007	'09	'129	'09	'008	'09	'161	'07
2 182	'215	'02	+ '002	'09	'144	'09	'006	'09	'154	'08
3 183	'217	'02	— '002	'09	'157	'09	'003	'09	'147	'08
4 184	'218	'01	'007	'09	'172	'08	— '000	'09	'139	'08
5 185	'219	'01	'011	'09	'186	'08	+ '003	'09	'131	'08
6 186	'220	'01	'016	'09	'200	'08	'005	'09	'123	'08
7 187	'221	'00	'020	'09	'214	'08	'008	'09	'116	'08
8 188	'221	'00	'025	'09	'227	'08	'011	'09	'107	'08
9 189	'221	'00	'030	'09	'239	'08	'014	'09	'100	'08
10 190	'220	+ '00	'034	'09	'252	'08	'017	'09	'091	'08
11 191	'220	— '01	'038	'09	'265	'07	'019	'09	'083	'09
12 192	'219	'01	'042	'09	'277	'07	'022	'09	'074	'09
13 193	'218	'01	'046	'08	'288	'07	'024	'08	'065	'09
14 194	'216	'02	'050	'08	'300	'07	'027	'08	'056	'09
15 195	'215	'02	'055	'08	'311	'07	'029	'08	'047	'09
16 196	'213	'02	'059	'08	'322	'06	'032	'08	'039	'09
17 197	'211	'02	'063	'08	'332	'06	'035	'08	'030	'09
18 198	'209	'03	'066	'08	'341	'06	'037	'08	'021	'09
19 199	'206	'03	'070	'08	'351	'06	'039	'08	'012	'09
20 200	'204	'03	'074	'07	'360	'05	'042	'07	— '004	'09
21 201	'200	'03	'078	'07	'369	'05	'044	'07	+ '005	'09
22 202	'197	'04	'081	'07	'377	'05	'046	'07	'014	'09
23 203	'194	'04	'084	'07	'384	'05	'048	'07	'023	'09
24 204	'189	'04	'088	'07	'391	'04	'051	'07	'033	'08
25 205	'186	'05	'091	'06	'398	'04	'053	'06	'042	'08
26 206	'181	'05	'094	'06	'404	'04	'055	'06	'051	'08
27 207	'177	'05	'097	'06	'410	'04	'057	'06	'059	'08
28 208	'172	'05	'100	'06	'416	'03	'059	'06	'068	'08
29 209	'167	'05	'103	'05	'420	'03	'061	'06	'071	'08
30 210	'161	'06	'106	'05	'424	'03	'063	'05	'074	'08
31 211	'156	'06	'108	'05	'428	'02	'064	'05	'077	'08
32 212	'151	'06	'110	'05	'431	'02	'065	'05	'079	'08
33 213	'145	'06	'113	'04	'433	'02	'067	'04	'081	'08
34 214	'139	'06	'115	'04	'436	'01	'068	'04	'083	'08
35 215	'133	'07	'117	'04	'437	'01	'069	'04	'085	'08
36 216	'127	'07	'119	'04	'438	'01	'071	'04	'087	'08
37 217	'120	'07	'120	'03	'438	'01	'072	'03	'089	'08
38 218	'114	'07	'121	'03	'439	'00	'073	'03	'091	'08
39 219	'108	'07	'123	'03	'439	'00	'074	'03	'093	'08
40 220	'101	'07	'124	'02	'438	— '00	'075	'02	'095	'08
41 221	'093	'07	'125	'02	'436	+ '01	'076	'02	'097	'08
42 222	'087	'08	'126	'02	'434	'01	'077	'02	'099	'08
43 223	'080	'08	'127	'01	'431	'01	'077	'02	'101	'08
44 224	'072	'08	'128	'01	'428	'02	'078	'01	'103	'08
45 225	— '065	— '08	— '128	+ '01	— '424	+ '02	+ '078	— '01	+ '195	— '05

NOTE.—When the *Argument* is on the *right-hand* side of the Table, the sign of the correction must be changed.

TABLE,

Showing the *Correction* to be applied to the *preceding* Apparent Places of Five Polar Stars, for the terms of Nutation involving 2ϵ .

Arg.		α Urs. Min.		51 Cephei.		σ Octantis.		δ Urs. Min.		λ Urs. Min.		Arg.	
ϵ		R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	ϵ	
$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$
45	225	—065	—08	—128	+01	—424	+02	+078	—01	+195	—05	135	315
46	226	058	08	128	00	420	02	078	01	201	05	136	316
47	227	050	08	129	00	415	03	079	00	207	04	137	317
48	228	043	08	129	+00	410	03	079	00	212	04	138	318
49	229	035	08	129	—01	404	03	079	—00	216	04	139	319
50	230	027	08	128	01	398	03	079	+01	221	04	140	320
51	231	020	08	127	01	391	04	079	01	226	03	141	321
52	232	012	08	127	02	383	04	079	01	230	03	142	322
53	233	—004	08	126	02	376	04	078	02	233	03	143	323
54	234	+003	08	125	02	368	05	078	02	237	02	144	324
55	235	011	08	124	02	359	05	077	02	240	02	145	325
56	236	019	08	123	03	350	05	076	03	243	02	146	326
57	237	027	08	121	03	341	05	075	03	246	02	147	327
58	238	035	08	120	03	331	06	075	03	249	01	148	328
59	239	042	08	118	04	320	06	074	03	251	01	149	329
60	240	049	08	116	04	310	06	073	04	253	01	150	330
61	241	057	08	115	04	300	06	072	04	254	00	151	331
62	242	064	08	112	04	288	07	071	04	256	00	152	332
63	243	071	08	110	05	276	07	069	05	257	—00	153	333
64	244	079	08	108	05	264	07	068	05	257	+01	154	334
65	245	086	08	105	05	252	07	067	05	257	01	155	335
66	246	093	07	102	06	239	07	065	05	257	01	156	336
67	247	100	07	100	06	226	07	064	06	257	02	157	337
68	248	107	07	097	06	213	08	062	06	256	02	158	338
69	249	114	07	094	06	199	08	060	06	255	02	159	339
70	250	120	07	090	06	186	08	058	06	254	02	160	340
71	251	126	07	088	07	172	08	057	06	252	03	161	341
72	252	133	07	084	07	157	08	055	07	251	03	162	342
Aug.	9	139	06	081	07	142	08	053	07	248	03	163	343
	19	46 45	06	077	07	128	08	051	07	245	04	164	344
Sept.	29	56	06	070	08	098	09	047	08	240	04	166	346
	8	47 162	06	066	08	084	09	044	08	236	04	167	347
	18	4 167	05	062	08	069	09	042	08	232	05	168	348
Oct.	28	172	05	058	08	053	09	039	08	229	05	169	349
	7	176	05	054	08	038	09	037	08	225	05	170	350
	16	181	05	050	08	023	09	034	08	220	05	171	351
Nov.	26	185	04	045	08	—007	09	032	08	215	06	172	352
	5	189	04	042	09	+008	09	030	08	210	06	173	353
	14	192	04	038	09	024	09	027	09	205	06	174	
84	264	197	04	033	09	038	09	025	09				
85	265	200	03	029	09	054	09	022	09				
86	266	203	03	024	09	069	09	019					
87	267	205	03	020	09	084	09	016					
88	268	209	03	015	09	099	09	014					
89	269												
90	270	+211	—02	—011	—09	+114	+09	+011					

NOTE.—When the *Argument* is on the *right-hand* side of correction must be changed.

1837.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Time of ☾'s Sem. pass. mer.	
Jan. 1	α Virginis - - -	4	^h ^m ^s 14 4 11·54	^o ['] S. 9 30	^s	^s	
	λ Virginis - - -	4	14 10 17·04	12 37			
	Moon II. l. c. - -	- -	13 57 27·24	11 10	128·08	66·30	
	Moon II. u. c. (24·8)		14 23 36·69	14 6	133·65	67·95	
	20 Libræ - - -	3·4	14 54 31·44	24 38			
	ε¹ Libræ - - -	5·6	15 2 55·03	S. 19 10			
	2	Moon II. l. c. - -	14 50 58·38	S. 16 55	140·10	69·39	
	Moon II. u. c. (25·8)		15 19 41·94	19 32	147·27	71·38	
	3	Moon II. l. c. - -	15 49 54·47	S. 21 54	154·87	73·23	
	Moon II. u. c. (26·9)		16 21 38·74	23 57	162·48	75·05	
	4	Moon II. l. c. - -	16 54 51·46	S. 25 36	169·49	76·68	
	Moon II. u. c. (27·9)		17 29 21·47	26 47	175·24	78·01	
	5	Moon II. l. c. - -	18 4 49·48	S. 27 27	179·04	78·87	
	Moon II. u. c. (28·9)		18 40 48·89	27 32	180·41	79·17	
6	Moon I. l. c. - -	19 14 11·39	S. 27 3	179·21	78·89		
7	Moon I. u. c. (0·5)	19 49 43·81	S. 25 59	175·75	78·07		
Moon I. l. c. - -	- -	20 24 21·88	24 25	170·33	76·80		
8	Moon I. u. c. (1·6)	20 57 46·75	S. 22 22	163·69	75·23		
Moon I. l. c. - -	- -	21 29 48·27	19 56	156·53	73·53		
9	Moon I. u. c. (2·6)	22 0 23·59	S. 17 11	149·42	71·81		
Moon I. l. c. - -	- -	22 29 36·09	14 13	142·78	70·17		
10	Moon I. u. c. (3·7)	22 57 33·19	S. 11 5	136·89	68·69		
Moon I. l. c. - -	- -	23 24 24·91	7 51	131·89	67·41		
11	ψ² Aquarii - - -	5	23 10 27·87	S. 10 30			
λ Piscium - - -	- -	5	23 33 42·99	N. 0 53			
Moon I. u. c. (4·7)		23 50 22·35	S. 4 35	127·85	66·37		
Moon I. l. c. - -	- -	0 15 37·14	1 18	124·77	65·57		
10 Ceti - - -	- -	6	0 18 14·90	S. 0 57			
12	10 Ceti - - -	6	0 18 14·89	S. 0 57			
Moon I. u. c. (5·7)		0 40 20·63	N. 1 56	122·63	65·01		
Moon I. l. c. - -	- -	1 4 43·66	5 5	121·36	64·68		
ε Piscium - - *		4	0 54 28·80	N. 7 1			
13	ε Piscium - - *	4	0 54 28·78	N. 7 1			
Moon I. u. c. (6·7)		1 28 56·47	8 7	120·91	64·57		
Moon I. l. c. - -	- -	1 53 8·42	11 2	121·20	64·66		
γ¹ Arietis - - -	- -	4·5	1 44 35·36	18 30			
ξ¹ Ceti - - - *		5	2 4 21·71	N. 8 5			

MOON-CULMINATING STARS. 411

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of C's R. A. in 1 hour of Long.	Sid. Time of C's Sem. pass. mer.
			h m s	° ' "	"	"
an. 14	γ^1 Arietis - - -	4.5	1 44 35.35	N.18 30		
	ξ^1 Ceti - - - *	5	2 4 21.70	8 5		
	Moon I. u.c. (7.8)		2 17 27.98	13 47	122.16	64.92
	Moon I. l.c. - -		2 42 2.44	16 21	123.67	65.33
	ν Arietis - - -	5.6	2 29 33.82	21 15		
	π Arietis - - -	5	2 40 12.38	N.16 47		
15	ν Arietis - - -	5.6	2 29 33.81	N.21 15		
	π Arietis - - -	5	2 40 12.37	16 47		
	Moon I. u.c. (8.8)		3 6 57.91	18 43	125.64	65.84
	Moon I. l.c. - -		3 32 18.96	20 50	127.91	66.44
	g Arietis - - -	5.6	3 15 11.60	24 9		
	η Tauri - - -	3	3 37 48.52	N.23 36		
16	g Arietis - - -	5.6	3 15 11.59	N.24 9		
	η Tauri - - -	3	3 37 48.51	23 36		
	Moon I. u.c. (9.8)		3 58 8.40	22 43	130.34	67.06
	Moon I. l.c. - -		4 24 27.07	24 19	132.75	67.65
	ν^1 Tauri - - -	5	4 16 33.79	22 26		
	τ Tauri - - -	5	4 32 28.58	N.22 38		
17	ν^1 Tauri - - -	5	4 16 33.78	N.22 26		
	τ Tauri - - -	5	4 32 28.57	22 38		
	Moon I. u.c. (10.9)		4 51 13.45	25 37	134.94	68.19
	Moon I. l.c. - -		5 18 23.90	26 36	136.72	68.62
	β Tauri - - -	2	5 16 0.26	28 28		
	ζ Tauri - - -	3.4	5 27 55.03	N.21 2		
18	β Tauri - - -	2	5 16 0.26	N.28 28		
	ζ Tauri - - -	3.4	5 27 55.03	21 2		
	Moon I. u.c. (11.9)		5 45 52.46	27 15	137.93	68.89
	Moon I. l.c. - -		6 13 31.44	27 34	138.44	68.99
	κ Aurigæ - - -	4	6 5 0.41	29 33		
	μ Geminorum -	3	6 13 6.79	N.22 35		
19	κ Aurigæ - - -	4	6 5 0.41	N.29 33		
	μ Geminorum -	3	6 13 6.79	22 35		
	Moon I. u.c. (12.9)		6 41 11.99	27 32	138.18	68.89
	Moon I. l.c. - -		7 8 44.72	27 10	137.15	68.60
	δ Geminorum -	3.4	7 10 94.56	22 17		
	α^2 Geminorum -	3		N.32 14		
20	δ Geminorum -	3.4		N.22 17		
	α^2 Geminorum -			32 14		
	Moon I. - - -			26 28	135.42	68.13
	δ Cancri - -			28 15		
	ϕ^2 Cancri - -			N.27 28		
21	δ Cancri - -			N.28 15		
	ϕ^2 Cancri - -			27 28		

412 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of C's R. A. in 1 hour of Long.	Sid. Time of C's Sen. pass. mer.
Jan. 21	Moon I. l. c.	-	h m s 8 2 52.46	N. 25 26	133.10	67.50
	Moon II. u. c. (15.0)	-	8 31 27.27	24 7	130.25	66.79
	ρ^A Cancri - - -	6	8 45 53.78	28 33		
	ξ Cancri - - -	5.6	8 59 59.68	N. 22 42		
22	ρ^A Cancri - - -	6	8 45 53.80	N. 28 33		
	ξ Cancri - - -	5.6	8 59 59.70	22 42		
	Moon II. l. c.	-	8 57 12.62	22 30	127.28	66.00
	Moon II. u. c. (16.1)	-	9 22 21.89	20 39	124.27	65.2
	η Leonis - - -	3.4	9 58 27.31	N. 17 33		
23	η Leonis - - -	3.4	9 58 27.33	N. 17 33		
	Moon II. l. c.	-	9 46 55.52	18 34	121.37	64.4
	Moon II. u. c. (17.1)	-	10 10 55.87	16 17	118.74	63.7
	ρ Leonis - - - *	4	10 24 14.27	10 9		
	h Leonis - - -	6	10 37 47.48	N. 15 3		
24	ρ Leonis - - - *	4	10 24 14.29	N. 10 9		
	h Leonis - - -	6	10 37 47.50	15 3		
	Moon II. l. c.	-	10 34 26.80	13 49	116.49	63.1
	Moon II. u. c. (18.1)	-	10 57 33.49	11 12	114.72	62.6
	ϵ Leonis - - - *	4	11 15 26.05	11 26		
25	ν Leonis - - -	4.5	11 28 36.81	N. 0 5		
	ϵ Leonis - - - *	4	11 15 26.08	N. 11 26		
	ν Leonis - - -	4.5	11 28 36.83	0 5		
	Moon II. l. c.	-	11 20 22.21	8 28	113.50	62.3
	Moon II. u. c. (19.1)	-	11 43 0.09	5 38	112.92	62.2
26	σ Virginis - - *	4.5	11 56 54.88	9 38		
	η Virginis - - -	3.4	12 11 34.37	N. 0 14		
	σ Virginis - - *	4.5	11 56 54.91	N. 9 38		
	η Virginis - - -	3.4	12 11 34.40	0 14		
	Moon II. l. c.	-	12 5 35.02	N. 2 43	113.02	62.30
27	Moon II. u. c. (20.2)	-	12 28 15.45	S. 0 15	113.85	62.50
	δ Virginis - - *	3.4	12 47 23.85	N. 4 17		
	g Virginis - - -	5.6	12 59 22.04	S. 9 52		
	δ Virginis - - *	3.4	12 47 23.88	N. 4 17		
	g Virginis - - -	5.6	12 59 22.07	S. 9 52		
28	Moon II. l. c.	-	12 51 10.54	3 15	115.47	63.04
	Moon II. u. c. (21.2)	-	13 14 30.01	S. 6 14	117.92	63.74
	ζ Virginis - - -	4	13 26 23.77	N. 0 14		
	x Virginis - - -	5.6	13 41 1.20	S. 17 19		
	ζ Virginis - - -	4	13 26 23.80	N. 0 14		
29	x Virginis - - -	5.6	13 41 1.24	S. 17 19		
	Moon II. l. c.	-	13 38 23.95	9 13	121.22	64.68
	Moon II. u. c. (22.2)	-	14 3 2.81	12 7	125.41	65.83
	λ Virginis - - -	4	14 10 17.96	S. 12 37		

MOON-CULMINATING STARS. 413

837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of G's R. A. in 1 hour of Long.	Sid. Time of G's Sem. pass. mer.
			^h ^m ^s	[°] [']	^s	^s
Jan. 28	α^3 Libræ - - -	3	14 41 52.00	S. 15 22		
29	λ Virginis - - -	4	14 10 17.99	S. 12 37		
	α^3 Libræ - - -	3	14 41 52.03	15 22		
	Moon II. <i>l. c.</i> - -	-	14 28 37.24	14 56	130.48	67.19
	Moon II. <i>u. c.</i> (23.3)	-	14 55 17.50	17 36	136.37	68.74
	γ^1 Libræ - - -	4.5	15 26 24.39	S. 14 14		
30	γ^1 Libræ - - -	4.5	15 26 24.42	S. 14 14		
	Moon II. <i>l. c.</i> - -	-	15 23 12.78	20 5	142.95	70.43
	Moon II. <i>u. c.</i> (24.3)	-	15 52 30.20	22 20	150.01	72.20
	ν Scorpii - - -	4	16 2 31.07	19 2		
	α Scorpii - - -	1	16 19 24.43	S. 26 4		
31	ν Scorpii - - -	4	16 2 31.10	S. 19 2		
	α Scorpii - - -	1	16 19 24.46	26 4		
	Moon II. <i>l. c.</i> - -	-	16 23 13.52	24 16	157.20	73.95
	Moon II. <i>u. c.</i> (25.3)	-	16 55 21.43	25 49	164.02	75.59
	A Ophiuchi - - -	4.5	17 5 18.82	26 21		
	θ Ophiuchi - - -	3.4	17 11 59.01	S. 24 50		
Feb. 1	Moon II. <i>l. c.</i> - -	-	17 28 46.18	S. 26 56	169.90	76.95
	Moon II. <i>u. c.</i> (26.4)	-	18 3 12.87	27 34	174.24	77.96
2	Moon II. <i>l. c.</i> - -	-	18 38 19.88	S. 27 39	176.55	78.45
	Moon II. <i>u. c.</i> (27.4)	-	19 13 40.94	27 11	176.56	78.42
3	Moon II. <i>l. c.</i> - -	-	19 48 48.56	S. 26 9	174.34	77.88
	Moon II. <i>u. c.</i> (28.5)	-	20 23 17.62	24 36	170.23	76.89
4	Moon II. <i>l. c.</i> - -	-	20 56 48.65	S. 22 34	164.67	75.58
5	Moon I. <i>u. c.</i> (0.1)	-	21 26 40.92	S. 20 7	158.83	74.08
	Moon I. <i>l. c.</i> - -	-	21 57 48.60	17 19	152.46	72.52
6	Moon I. <i>u. c.</i> (1.1)	-	22 27 40.91	S. 14 16	146.34	71.00
	Moon I. <i>l. c.</i> - -	-	22 56 22.87	11 2	140.78	69.61
7	Moon I. <i>u. c.</i> (2.2)	-	23 24 2.53	S. 7 41	135.97	68.39
	Moon I. <i>l. c.</i> - -	-	23 49 49.67	4 16	132.03	67.40
8	Moon I. <i>u. c.</i> (3.2)	-	24.82	S. 0 52	128.98	66.62
	Moon I. <i>l. c.</i> - -	-	28.63	N. 2 30	126.80	66.08
9	<i>m</i> Ceti - - -	-	29.99	S. 2 2		
	Moon I. <i>u. c.</i> - -	-	1.48	N. 5 45	125.47	65.75
	Moon I. <i>l. c.</i> - -	-	3.08	8 54	124.92	65.64
	η Piscis - - -	-	41	14 30		
	ϕ Pisc - - -	-	77	N. 8 20		

414 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R.A. in 1 hour of Long.	Sid. Tim of ☾'s Set. pass. mer.
Feb. 10	η Piscium - - -	4	^h 1 ^m 22 ^s 45 '40	N. 14 30		
	ο Piscium - - *	5	1 36 46 '76	8 20		
	Moon I. v.c. (5 '3)		1 57 42 '41	11 53	125 '08	65 '71
	Moon I. l.c. - -		2 22 47 '44	14 40	125 '86	65 '93
	ξ ² Ceti - - - *	5	2 19 29 '51	7 44		
	μ Ceti - - - *	4	2 36 7 '81	N. 9 25		
11	ξ ² Ceti - - - *	5	2 19 29 '49	N. 7 44		
	μ Ceti - - - *	4	2 36 7 '80	9 25		
	Moon I. v.c. (6 '3)		2 48 4 '99	17 15	127 '15	66 '32
	Moon I. l.c. - -		3 13 40 '48	19 36	128 '83	66 '78
	δ Arietis - - -	4	3 2 18 '69	N. 18 6		
12	δ Arietis - - -	4	3 2 18 '67	N. 18 6		
	Moon I. v.c. (7 '3)		3 39 37 '83	21 41	130 '76	67 '32
	Moon I. l.c. - -		4 5 59 '12	23 29	132 '78	67 '85
	ω ^s Tauri - - -	5.6	4 7 42 '69	20 10		
	ν ¹ Tauri - - -	5	4 16 33 '47	N. 22 26		
13	ω ^s Tauri - - -	5.6	4 7 42 '68	N. 20 10		
	ν ¹ Tauri - - -	5	4 16 33 '45	22 26		
	Moon I. v.c. (8 '4)		4 32 44 '35	25 0	134 '73	68 '35
	Moon I. l.c. - -		4 59 51 '60	26 11	136 '42	68 '78
	ι Tauri - - -	4.5	4 53 21 '77	21 21		
	η Tauri - - -	5.6	5 9 28 '79	N. 21 55		
14	ι Tauri - - -	4.5	4 53 21 '75	N. 21 21		
	η Tauri - - -	5.6	5 9 28 '77	21 55		
	Moon I. v.c. (9 '4)		5 27 16 '68	27 3	137 '68	69 '09
	Moon I. l.c. - -		5 54 53 '68	27 35	138 '38	69 '24
	C Tauri - - -	4.5	5 43 5 '64	27 34		
	η Geminorum -	4.5	6 5 3 '08	N. 22 33		
15	C Tauri - - -	4.5	5 43 5 '63	N. 27 34		
	η Geminorum -	4.5	6 5 3 '07	22 33		
	Moon I. v.c. (10 '4)		6 22 35 '21	27 46	138 '43	69 '22
	Moon I. l.c. - -		6 50 13 '15	27 36	137 '78	69 '01
	ε Geminorum -	3	6 33 54 '96	25 17		
	τ Geminorum -	5	7 0 46 '50	N. 30 30		
16	ε Geminorum -	3	6 33 54 '95	N. 25 17		
	τ Geminorum -	5	7 0 46 '50	30 30		
	Moon I. v.c. (11 '5)		7 17 39 '23	27 6	136 '46	68 '63
	Moon I. l.c. - -		7 44 45 '79	26 16	134 '55	68 '08
	β Geminorum -	2	7 35 21 '19	28 25		
	φ Geminorum -	5	7 43 32 '07	N. 27 11		
17	β Geminorum -	2	7 35 21 '18	N. 28 25		
	φ Geminorum -	5	7 43 32 '06	27 11		
	Moon I. v.c. (12 '5)		8 11 26 '47	N. 25 7	132 '17	

MOON-CULMINATING STARS. 415

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of C's Sem. pass. mer.
Feb. 17	<i>Moon I.</i> <i>l. c.</i>	- -	^h ^m ^s 8 37 36.58	[°] ['] N. 23 40	^s 129.48	^s 66.67
	δ Cancrī - - -	4.5	8 35 26.06	18 45		
	ρ ⁴ Cancrī - - -	6	8 45 54.00	N. 28 33		
18	δ Cancrī - - -	4.5	8 35 26.06	N. 18 45		
	ρ ⁴ Cancrī - - -	6	8 45 54.01	28 33		
	<i>Moon I.</i> <i>u. c.</i> (13.5)		9 3 13.29	21 57	126.63	65.88
	<i>Moon I.</i> <i>l. c.</i>	- -	9 28 15.76	19 59	123.80	65.09
	λ Leonis - - -	4.5	9 22 26.01	23 41		
	ο Leonis - - - *	4	9 32 28.07	N. 10 38		
19	λ Leonis - - -	4.5	9 22 26.01	N. 23 41		
	ο Leonis - - - *	4	9 32 28.07	10 38		
	<i>Moon I.</i> <i>u. c.</i> (14.6)		9 52 44.95	17 48	121.11	64.33
	γ Leonis - - -	2	10 10 59.89	20 40		
	ρ Leonis - - - *	4	10 24 14.70	N. 10 9		
20	γ Leonis - - -	2	10 10 59.90	N. 20 40		
	ρ Leonis - - - *	4	10 24 14.70	10 9		
	<i>Moon II.</i> <i>l. c.</i>	- -	10 18 50.75	15 25	118.59	63.66
	<i>Moon II.</i> <i>u. c.</i> (15.6)		10 42 21.33	12 51	116.58	63.10
	χ Leonis - - - *	4.5	10 56 37.55	8 13		
	ι Leonis - - - *	4	11 15 26.59	N. 11 26		
21	χ Leonis - - - *	4.5	10 56 37.56	N. 8 13		
	ι Leonis - - - *	4	11 15 26.61	11 26		
	<i>Moon II.</i> <i>l. c.</i>	- -	11 5 30.51	10 9	115.04	62.68
	<i>Moon II.</i> <i>u. c.</i> (16.6)		11 28 24.35	7 20	114.03	62.40
	β Virginis - - -	3.4	11 42 13.63	2 41		
	ο Virginis - - - *	4.5	11 56 55.50	N. 9 38		
22	β Virginis - - -	3.4	11 42 13.65	N. 2 41		
	ο Virginis - - - *	4.5	11 56 55.51	9 38		
	<i>Moon II.</i> <i>l. c.</i>	- -	11 51 9.63	4 25	113.62	62.30
	<i>Moon II.</i> <i>u. c.</i> (17.7)		12 13 53.82	N. 1 26	113.85	62.40
	γ ¹ Virginis - - -	4	12 33 25.04	S. 0 33		
	δ Virginis - - - *	3.4	12 47 24.54	N. 4 17		
23	γ ¹ Virginis - - -	4	12 33 25.06	S. 0 33		
	δ Virginis - - - *	3.4	12 47 24.56	N. 4 17		
	<i>Moon II.</i> <i>l. c.</i>	- -	12 36 44.86	S. 1 35	114.77	62.68
	<i>Moon II.</i> <i>u. c.</i> (18.7)		12 59 51.27	4 36	116.42	63.17
	α Virginis - - -	1	13 16 37.62	S. 10 18		
	ξ Virginis - - -	4	13 26 24.52	N. 0 14		
			13 16 37.65	S. 10 18		
			13 26 24.54	N. 0 14		
			13 23 21.97	S. 7 36	118.82	63.88
			47 26.03	10 34	121.99	64.79
			4 13.26	S. 9 31		

416 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. T. of ☾'s S. pass.
			^h ^m ^s	[°] [']	^s	
Feb. 24	λ Virginis - - -	4	14 10 18.78	S. 12 37		
25	κ Virginis - - -	4	14 4 13.28	S. 9 31		
	λ Virginis - - -	4	14 10 18.80	12 37		
	Moon II. <i>l. c.</i> - -	-	14 12 12.88	13 26	125.94	65.7
	Moon II. <i>u. c.</i> (20.8)		14 37 51.60	16 10	130.64	67.7
20	Libræ - - - -	3.4	14 54 33.36	24 38		
	β Libræ - - - -	2.3	15 8 15.03	S. 8 47		
26	20 Libræ - - - -	3.4	14 54 33.39	S. 24 38		
	β Libræ - - - -	2.3	15 8 15.06	8 47		
	Moon II. <i>l. c.</i> - -	-	15 4 30.79	18 44	136.00	68.7
	Moon II. <i>u. c.</i> (21.8)		15 32 17.75	21 6	141.90	70.7
	π Scorp̄ii - - -	3.4	15 49 0.39	25 38		
	β ¹ Scorp̄ii - - -	2	15 55 58.28	S. 19 21		
27	π Scorp̄ii - - -	3.4	15 49 0.43	S. 25 38		
	β ¹ Scorp̄ii - - -	2	15 55 58.31	19 21		
	Moon II. <i>l. c.</i> - -	-	16 1 17.53	23 11	148.10	71.7
	Moon II. <i>u. c.</i> (22.8)		16 31 32.02	24 58	154.29	73.7
	A Ophiuchi - - -	4.5	17 5 19.74	26 21		
	θ Ophiuchi - - -	3.4	17 11 59.92	S. 24 50		
28	A Ophiuchi - - -	4.5	17 5 19.77	S. 26 21		
	θ Ophiuchi - - -	3.4	17 11 59.95	24 50		
	Moon II. <i>l. c.</i> - -	-	17 2 58.67	26 22	160.05	74.7
	Moon II. <i>u. c.</i> (23.9)		17 35 29.59	27 20	164.92	75.7
	γ ² Sagittarii - - -	4	17 55 19.96	30 23		
	λ Sagittarii - - -	4	18 17 54.08	S. 25 30		
Mar. 1	γ ² Sagittarii - - -	4	17 55 19.99	S. 30 23		
	λ Sagittarii - - -	4	18 17 54.12	25 30		
	Moon II. <i>l. c.</i> - -	-	18 8 51.29	27 49	168.44	76.7
	Moon II. <i>u. c.</i> (24.9)		18 42 45.30	27 49	170.25	77.7
	π Sagittarii - - -	4.5	19 0 3.35	21 17		
	h ² Sagittarii - - -	4.5	19 26 46.16	S. 25 14		
2	Moon II. <i>l. c.</i> - -	-	19 16 50.01	S. 27 17	170.21	77.7
	Moon II. <i>u. c.</i> (26.0)		19 50 43.08	26 13	168.35	76.6
3	Moon II. <i>l. c.</i> - -	-	20 24 4.36	S. 24 40	164.97	75.8
	Moon II. <i>u. c.</i> (27.0)		20 56 38.02	22 39	160.50	74.7
4	Moon II. <i>l. c.</i> - -	-	21 28 13.76	S. 20 14	155.40	73.4
	Moon II. <i>u. c.</i> (28.0)		21 58 46.82	17 29	150.13	72.1
5	Moon II. <i>l. c.</i> - -	-	22 28 17.52	S. 14 27	145.06	70.8
	Moon II. <i>u. c.</i> (29.1)		22 56 49.94	11 12	140.45	69.6
6	Moon I. <i>l. c.</i> - -	-	23 22 13.64	S. 7 49	136.65	68.6

MOON-CULMINATING STARS. 417

337.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of C's R. A. in 1 hour of Long.	Sid. Time of C's Sem. pass. mer.
7	Moon I. u.c.	(0.7)	^h 23 ^m 49 ^s 13.18	S. 4 22	133.41	67.76
	Moon I. l.c.	- -	0 15 38.55	0 53	130.95	67.12
8	Moon I. u.c.	(1.7)	0 41 39.14	N. 2 33	129.28	66.70
	Moon I. l.c.	- -	1 7 24.38	5 55	128.38	66.48
9	Moon I. u.c.	(2.7)	1 33 3.00	N. 9 9	128.18	66.46
	Moon I. l.c.	- -	1 58 43.10	12 13	128.61	66.60
10	β Arietis - - -	3	1 45 37.76	N.20 1		
	Moon I. u.c.	(3.8)	2 24 31.68	15 5	129.57	66.90
	Moon I. l.c.	- -	2 50 34.52	17 44	130.96	67.30
	π Arietis - - -	5	2 40 11.64	16 47		
	δ Arietis - - -	4	3 2 18.29	N.18 6		
11	π Arietis - - -	5	2 40 11.63	N.16 47		
	δ Arietis - - -	4	3 2 18.28	18 6		
	Moon I. u.c.	(4.8)	3 16 55.93	20 7	132.65	67.78
	Moon I. l.c.	- -	3 43 38.52	22 13	134.47	68.29
	η Tauri - - -	3	3 37 47.71	23 36		
	Α' Tauri - - -	5	3 55 3.51	N.21 38		
12	η Tauri - - -	3	3 37 47.70	N.23 36		
	Α' Tauri - - -	5	3 55 3.49	21 38		
	Moon I. u.c.	(5.8)	4 10 42.96	24 1	136.26	68.79
	Moon I. l.c.	- -	4 38 7.86	25 30	137.85	69.23
	τ Tauri - - -	5	4 32 27.81	22 38		
	ι Tauri - - -	4.5	4 53 21.32	N.21 21		
13	τ Tauri - - -	5	4 32 27.79	N.22 38		
	ι Tauri - - -	4.5	4 53 21.30	21 21		
	Moon I. u.c.	(6.9)	5 5 49.84	26 38	139.07	69.56
	Moon I. l.c.	- -	5 33 43.48	27 26	139.78	69.76
	β Tauri - - -	2	5 15 59.52	28 28		
	C Tauri - - -	4.5	5 43 5.19	N.27 34		
14	β Tauri - - -	2	5 15 59.50	N.28 28		
	C Tauri - - -	4.5	5 43 5.17	27 34		
	Moon I. u.c.	(7.9)	6		139.88	69.78
	Moon I. l.c.	- -	6		139.32	69.63
	ε Geminorum -	3	6			
15	ε Geminorum -	3	6			
	Moon I. u.c.	(8.9)			138.10	69.30
	Moon I. l.c.	- -			136.28	68.80
	ι Geminorum -	4				
16	κ Geminorum -	4				
	ι Geminorum -					

418 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.				Var. of G's R. A. in 1 hour of Long.	Sid. T. of pass.
			Apparent Right Ascension in Time.	Declination.				
Mar. 16	Moon I. u.c.	(10.0)	^h ^m ^s 7 51 52.01	[°] ['] N. 26 9	^s 133.99	^s 68		
	Moon I. l.c.	- -	8 18 24.41	24 55	131.36	67		
	λ Cancrī - - -	6	8 10 50.68	24 32				
	φ ^s Cancrī - - -	6	8 16 55.77	N. 27 28				
17	λ Cancrī - - -	6	8 10 50.66	N. 24 32				
	φ ^s Cancrī - - -	6	8 16 55.75	27 28				
	Moon I. u.c.	(11.0)	8 44 24.03	23 23	128.55	66		
	Moon I. l.c.	- -	9 9 49.60	21 35	125.72	65		
	ξ Cancrī - - -	5.6	8 59 59.82	22 42				
	q Cancrī - - -	6	9 9 53.55	N. 18 24				
18	ξ Cancrī - - -	5.6	8 59 59.81	N. 22 42				
	q Cancrī - - -	6	9 9 53.54	18 24				
	Moon I. u.c.	(12.0)	9 34 41.68	19 32	123.00	65		
	Moon I. l.c.	- -	9 59 2.50	17 16	120.52	64		
	π Leonis - - *	4.5	9 51 37.03	8 49				
	α Leonis - - *	1	9 59 42.58	N. 12 46				
19	π Leonis - - *	4.5	9 51 37.03	N. 8 49				
	α Leonis - - *	1	9 59 42.57	12 46				
	Moon I. u.c.	(13.1)	10 22 55.54	14 49	118.39	63		
	Moon I. l.c.	- -	10 46 25.50	12 11	116.69	63		
	k Leonis - - -	6	10 37 48.07	15 3				
	c Leonis - - *	5.6	10 52 19.16	N. 6 59				
20	k Leonis - - -	6	10 37 48.07	N. 15 3				
	c Leonis - - *	5.6	10 52 19.16	6 59				
	Moon I. u.c.	(14.1)	11 9 38.04	9 25	115.49	62		
	Moon I. l.c.	- -	11 32 39.53	6 31	114.85	62		
	v Leonis - - -	4.5	11 28 37.61	0 5				
	β Virginis - - -	3.4	11 42 13.91	N. 2 41				
21	v Leonis - - -	4.5	11 28 37.61	N. 0 5				
	β Virginis - - -	3.4	11 42 13.91	2 41				
	Moon I. u.c.	(15.1)	11 55 36.92	3 32	114.82	62		
	η Virginis - - -	3.4	12 11 35.37	N. 0 14				
	γ ¹ Virginis - - -	4	12 33 25.43	S. 0 33				
22	η Virginis - - -	3.4	12 11 35.38	N. 0 14				
	γ ¹ Virginis - - -	4	12 33 25.44	S. 0 33				
	Moon II. l.c.	- -	12 20 43.35	N. 0 29	115.48	62		
	Moon II. u.c.	(16.2)	12 43 56.32	S. 2 36	116.80	63		
	θ Virginis - - -	4.5	13 1 32.47	4 40				
	α Virginis - - -	1	13 16 38.13	S. 10 18				
23	θ Virginis - - -	4.5	13 1 32.48	S. 4 40				
	α Virginis - - -	1	13 16 38.14	10 18				
	Moon II. l.c.	- -	13 7 29.36	5 41	118.83	63		
	Moon II. u.c.	(17.2)	13 31 31.05	S. 8 44	121.57	64		

MOON-CULMINATING STARS. 419

837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of G's R. A. in 1 hour of Long.	Sid. Time of G's Sem. pass. mer.
			^h ^m ^s	[°] [']	^s	^s
ar. 23	α Virginis - - -	5.6	13 41 2.59	S. 17 19		
	κ Virginis - - -	4	14 4 13.86	S. 9 31		
24	α Virginis - - -	5.6	13 41 2.60	S. 17 19		
	κ Virginis - - -	4	14 4 13.87	9 31		
	Moon II. <i>l. c.</i> - -	-	13 56 9.98	11 43	125.04	65.48
	Moon II. <i>u. c.</i> (18.2)	-	14 21 34.65	14 36	129.19	66.63
	α^2 Libræ - - -	3	14 41 53.57	15 22		
	20 Libræ - - -	3.4	14 54 34.10	S. 24 38		
25	α^2 Libræ - - -	3	14 41 53.59	S. 15 22		
	20 Libræ - - -	3.4	14 54 34.13	24 38		
	Moon II. <i>l. c.</i> - -	-	14 47 52.93	17 19	133.96	67.92
	Moon II. <i>u. c.</i> (19.3)	-	15 15 11.57	19 51	139.22	69.34
	π Scorpii - - -	3.4	15 49 1.23	25 38		
	β^1 Scorpii - - -	2	15 55 59.10	S. 19 21		
26	π Scorpii - - -	3.4	15 49 1.26	S. 25 38		
	β^1 Scorpii - - -	2	15 55 59.12	19 21		
	Moon II. <i>l. c.</i> - -	-	15 43 35.48	22 7	144.80	70.80
	Moon II. <i>u. c.</i> (20.3)	-	16 13 6.82	24 6	150.41	72.25
	α Scorpii - - -	1	16 19 26.28	26 4		
	τ Scorpii - - -	3.4	16 25 45.65	S. 27 52		
27	α Scorpii - - -	1	16 19 26.31	S. 26 4		
	τ Scorpii - - -	3.4	16 25 45.68	27 52		
	Moon II. <i>l. c.</i> - -	-	16 43 44.05	25 44	155.70	73.61
	Moon II. <i>u. c.</i> (21.3)	-	17 15 20.94	26 57	160.29	74.76
	p Sagittarii - - -	5	17 37 18.65	27 46		
	γ^2 Sagittarii - - -	4	17 55 20.91	S. 30 25		
28	p Sagittarii - - -	5	17 37 18.68	S. 27 46		
	γ^2 Sagittarii - - -	4	17 55 20.95	30 25		
	Moon II. <i>l. c.</i> - -	-	17 47 46.71	27 44	163.78	75.64
	Moon II. <i>u. c.</i> (22.4)	-	18 20 45.88	28 3	165.81	76.16
	σ Sagittarii - - -	3	18 45 9.56	26 29		
	ζ Sagittarii - - -	3.4	18 52 14.71	S. 30 6		
29	σ Sagittarii - - -	3	18 45 9.60	S. 26 29		
	ζ Sagittarii - - -	3.4	18 52 14.74	30 6		
	Moon II. <i>l. c.</i> - -	-	18 47 46.71	27 51	166.22	76.27
	Moon II. <i>u. c.</i> (23.4)	-	19 15 20.94	27 10	165.01	75.99
	c Sagittarii - - -	4.5	19 15 20.94	28 9		
	σ Capricorni - - -	5.6	20 15 20.94	S. 19 37		
30	c Sagittarii - - -	4.5	19 15 20.94	28 9		
	σ Capricorni - - -	5.6	20 15 20.94	19 37		
	Moon II. <i>l. c.</i> - -	-	19 15 20.94	25 59	162.35	75.35
	Moon II. <i>u. c.</i> (24.4)	-	20 15 20.94	24 21	158.38	74.43
	η Capricorni - - -	5.6	20 15 20.94	19 30		

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of C's R.A. in 1 hour of Long.	Sub. Im. of C's S. pass. m.
Mar. 30	ζ Capricorni - -	4	^h 21 ^m 17 ^s 20·51	S. 23° 7'		
31	η Capricorni - -	5	20 55 6·89	S. 20 30		
	ζ Capricorni - -	4	21 17 20·53	23 7		
	Moon II. <i>l. c.</i> - -	-	21 3 17·24	22 18	154·10	73 31
	Moon II. <i>u. c.</i> (25·5)	-	21 33 37·90	19 53	149·33	72 10
	ι Aquarii - - -	4·5	21 57 37·02	14 39		
	θ Aquarii - - -	4·5	22 8 12·91	S. 8 36		
April 1	Moon II. <i>l. c.</i> - -	-	22 3 1·37	S. 17 9	144·62	70 8
	Moon II. <i>u. c.</i> (26·5)	-	22 31 30·14	14 10	140·25	69 7
2	Moon II. <i>l. c.</i> - -	-	22 59 9·61	S. 10 59	136·43	68 7
	Moon II. <i>u. c.</i> (27·6)	-	23 26 7·12	7 39	133·28	67 8
3	Moon II. <i>l. c.</i> - -	-	23 52 31·22	S. 4 15	130·87	67 4
	Moon II. <i>u. c.</i> (28·6)	-	0 18 30·96	S. 0 48	129·22	66 7
4	Moon II. <i>l. c.</i> - -	-	0 44 15·48	N. 2 38	128·33	66 4
5	Moon I. <i>u. c.</i> (0·2)	-	1 7 40·81	N. 5 59	127·98	66 4
	Moon I. <i>l. c.</i> - -	-	1 33 20·66	9 14	128·60	66 4
6	Moon I. <i>u. c.</i> (1·2)	-	1 59 9·51	N. 12 20	129·63	66 8
	Moon I. <i>l. c.</i> - -	-	2 25 13·79	15 15	131·15	67 3
7	Moon I. <i>u. c.</i> (2·3)	-	2 51 38·52	N. 17 56	133·02	67 7
	Moon I. <i>l. c.</i> - -	-	3 18 27·02	20 21	135·09	68 3
8	Moon I. <i>u. c.</i> (3·3)	-	3 45 40·63	N. 22 28	137·17	68 3
	Moon I. <i>l. c.</i> - -	-	4 13 18·50	24 17	139·10	69 3
9	ε Tauri - - - -	4	4 19 5·55	N. 18 49		
	α Tauri - - - -	1	4 26 33·76	16 11		
	Moon I. <i>u. c.</i> (4·3)	-	4 41 17·58	25 45	140·67	69 8
	Moon I. <i>l. c.</i> - -	-	5 9 32·58	26 53	141·73	70 1
	η Tauri - - - -	5·6	5 9 27·90	21 55		
	β Tauri - - - -	2	5 15 59·07	N. 28 28		
10	η Tauri - - - -	5·6	5 9 27·88	N. 21 55		
	β Tauri - - - -	2	5 15 59·05	28 28		
	Moon I. <i>u. c.</i> (5·4)	-	5 37 56·42	27 38	142·13	70 3
	Moon I. <i>l. c.</i> - -	-	6 6 20·70	28 1	141·79	70 2
	κ Aurigæ - - - -	4	6 4 59·30	29 33		
	μ Geminorum - -	3	6 13 5·78	N. 22 35		
11	κ Aurigæ - - - -	4	6 4 59·28	N. 29 33		
	μ Geminorum - -	3	6 13 5·77	22 35		
	Moon I. <i>u. c.</i> (6·4)	-	6 34 36·47	28 3	140·72	70 0
	Moon I. <i>l. c.</i> - -	-	7 2 35·12	N. 27 43	138·95	69 50

422 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Tim of ☾'s Sen. pass. etc.
April 18	δ Virginis - - *	3.4	^h ^m ^s 12 47 25.14	N. 4 17	s	s
19	γ ¹ Virginis - - -	4	12 33 25.56	S. 0 33		
	δ Virginis - - *	3.4	12 47 25.14	N. 4 17		
	Moon I. v.c. (14.7)		13 10 6.02	S. 6 17	120.66	64.33
	Moon I. l.c. - -		13 34 33.12	9 23	123.98	65.22
	α Virginis - - -	1	13 16 38.38	S. 10 18		
	ζ Virginis - - -	4	13 26 25.31	N. 0 14		
20	α Virginis - - -	1	13 16 38.39	S. 10 18		
	ζ Virginis - - -	4	13 26 25.31	N. 0 14		
	Moon II. v.c. (15.7)		14 1 57.02	S. 12 24	128.22	66.31
	λ Virginis - - -	4	14 10 19.80	12 37		
	α ² Libræ - - -	3	14 41 54.04	S. 15 22		
21	λ Virginis - - -	4	14 10 19.81	S. 12 37		
	α ² Libræ - - -	3	14 41 54.06	15 22		
	Moon II. l.c. - -		14 28 3.54	15 18	132.98	67.56
	Moon II. v.c. (16.7)		14 55 10.67	18 3	138.30	68.35
	γ ¹ Libræ - - -	4.5	15 26 26.62	14 14		
	η Libræ - - -	4.5	15 34 56.47	S. 15 9		
22	γ ¹ Libræ - - -	4.5	15 26 26.63	S. 14 14		
	η Libræ - - -	4.5	15 34 56.49	15 9		
	Moon II. l.c. - -		15 23 24.26	20 34	144.02	70.41
	Moon II. v.c. (17.8)		15 52 47.49	22 49	149.85	71.9
	ν Scorp̄ii - - -	4	16 2 33.48	19 2		
	α Scorp̄ii - - -	1	16 19 27.01	S. 26 4		
23	ν Scorp̄ii - - -	4	16 2 33.50	S. 19 2		
	α Scorp̄ii - - -	1	16 19 27.03	26 4		
	Moon II. l.c. - -		16 23 19.80	24 44	155.47	73.3
	Moon II. v.c. (18.8)		16 54 56.07	26 15	160.43	74.6
	θ Ophiuchi - - -	3.4	17 12 1.67	24 50		
	p Sagittarii - - -	5	17 37 19.52	S. 27 46		
24	θ Ophiuchi - - -	3.4	17 12 1.70	S. 24 50		
	p Sagittarii - - -	5	17 37 19.55	27 46		
	Moon II. l.c. - -		17 27 25.82	27 20	164.31	75.6
	Moon II. v.c. (19.9)		18 0 33.66	27 57	166.72	76.25
	φ Sagittarii - - -	4.5	18 35 29.46	27 9		
	σ Sagittarii - - -	3	18 45 10.48	S. 26 29		
25	φ Sagittarii - - -	4.5	18 35 29.49	S. 27 9		
	σ Sagittarii - - -	3	18 45 10.51	26 29		
	Moon II. l.c. - -		18 34 0.21	28 4	167.40	76.42
	Moon II. v.c. (20.9)		19 7 24.27	27 40	166.31	76.20
	λ ³ Sagittarii - - -	4.5	19 26 47.94	25 14		
	c Sagittarii - - -	4.5	19 52 38.42	S. 28 9		

MOON-CULMINATING STARS. 423

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Time of ☾'s Sem. pass, mer.
April 26	h ^s Sagittarii - -	4.5	19 26 47.98	S. 25 14		
	c Sagittarii - -	4.5	19 52 38.46	28 9		
	Moon II. l. c. - -	-	19 40 25.39	26 47	163.63	75.59
	Moon II. v. c. (21.9)		20 12 46.27	25 26	159.67	74.66
	ψ Capricorni - -	4.5	20 36 26.79	25 51		
	γ Capricorni - -	5	20 55 7.69	S. 20 30		
	27 ψ Capricorni - -	4.5	20 36 26.83	S. 25 51		
	γ Capricorni - -	5	20 55 7.73	20 30		
	Moon II. l. c. - -	-	20 44 14.23	23 39	154.89	73.50
	Moon II. v. c. (23.0)		21 14 42.03	21 29	149.72	72.23
28	γ Capricorni - -	4	21 31 3.38	17 24		
	δ Capricorni - -	3.4	21 38 2.38	S. 16 52		
	γ Capricorni - -	4	21 31 3.41	S. 17 24		
	δ Capricorni - -	3.4	21 38 2.36	16 52		
	Moon II. l. c. - -	-	21 44 7.47	18 59	144.56	70.92
	Moon II. v. c. (24.0)		22 12 32.62	16 13	139.72	69.68
	σ Aquarii - - -	5	22 22 1.00	11 31		
	λ Aquarii - - -	4	22 44 6.31	S. 8 27		
	29 σ Aquarii - - -	5	22 22 1.02	S. 11 31		
	λ Aquarii - - -	4	22 44 6.33	8 27		
30	Moon II. l. c. - -	-	22 40 2.86	13 14	135.43	68.55
	Moon II. v. c. (25.1)		23 6 45.71	S. 10 5	131.84	67.58
	λ Piscium - - -	5	23 33 43.61	N. 0 53		
	π Piscium - - -	5.6	23 39 32.86	S. 3 40		
	Moon II. l. c. - -	-	23 32 50.09	S. 6 49	129.02	66.81
	Moon II. v. c. (26.1)		23 58 25.51	3 29	127.02	66.24
	May 1 Moon II. l. c. - -	-	0 23 41.81	S. 0 7	125.83	65.88
	Moon II. v. c. (27.1)		0 48 48.53	N. 3 13	125.42	65.75
	2 Moon II. l. c. - -	-	1 13 54.91	N. 6 30	125.76	65.82
	Moon II. v. c. (28.1)		1 39 9.40	9 41	126.77	66.06
3	Moon II. l. c. - -	-	2 4 39.63	12 43	128.36	66.47
	Moon II. v. c. (29.2)		2 30 31.97	14 34	130.43	67.01
	4 Moon I. l. c. - -	-	2 54 36.02	18 12	132.72	67.63
	5 Moon I. v. c. (0.2)		3 21 23.91	0 35	135.28	68.31
	Moon I. l. c. - -	-	3 48 42.37	0 41	137.80	68.98
	6 Moon I. v. c. (1.2)		4 16 30.52	28	140.00	69.59
	Moon I. l. c. - -	-	4 44 42.37	34	141.92	70.08
	7 Moon I. v. c. (2.2)		5 13 13.42	39	143.11	70.41
	Moon I. l. c. - -	-	5 41 24.37	42	143.11	70.54

424 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.				Var. of R. A. in 1 hour of Long.	Sid. Tim. of Transit
			Apparent Right Ascension in Time.	Declination.				
			^h ^m ^s	[°] [']				
May 8	<i>l</i> Aurigæ - - -	5	5 28 9.44	N.30 23				
	C Tauri - - -	4.5	5 43 4.42	27 34				
	Moon I. u.c. (3.8)		6 10 33.94	28 2	143.01	70.4		
	Moon I. l.c. - -		6 39 2.95	28 0	141.68	70.1		
	ϵ Geminorum -	3	6 33 53.75	25 17				
	ζ Geminorum -	4	6 54 26.09	N.20 48				
9	ϵ Geminorum -	3	6 33 53.74	N.25 17				
	ζ Geminorum -	4	6 54 26.08	20 48				
	Moon I. u.c. (4.9)		7 7 11.22	27 36	139.58	69.6		
	Moon I. l.c. - -		7 34 50.39	26 52	136.86	68.3		
	α^2 Geminorum -	3	7 24 11.43	32 14				
	β Geminorum -	2	7 35 20.01	N.28 25				
10	α^2 Geminorum -	3	7 24 11.42	N.32 14				
	β Geminorum -	2	7 35 20.00	28 25				
	Moon I. u.c. (5.9)		8 1 54.06	25 48	133.70	68.1		
	Moon I. l.c. - -		8 28 18.32	24 26	130.32	67.4		
	ϕ^2 Cancri - - -	6	8 16 54.93	27 28				
	δ Cancri - - -	4.5	8 35 25.14	N.18 45				
11	ϕ^2 Cancri - - -	6	8 16 54.92	N.27 28				
	δ Cancri - - -	4.5	8 35 25.13	18 45				
	Moon I. u.c. (6.9)		8 54 1.60	22 48	126.91	66.7		
	Moon I. l.c. - -		9 19 4.62	20 55	123.64	65.7		
	λ Leonis - - -	4.5	9 22 25.25	23 41				
	σ Leonis - - - *	4	9 32 27.41	N.10 38				
12	λ Leonis - - -	4.5	9 22 25.24	N.23 41				
	σ Leonis - - - *	4	9 32 27.40	10 38				
	Moon I. u.c. (8.0)		9 43 30.03	18 48	120.67	64.7		
	Moon I. l.c. - -		10 7 22.20	16 29	118.11	63.7		
	α Leonis - - - *	1	9 59 42.03	12 46				
	γ Leonis - - -	2	10 10 59.40	N.20 40				
13	α Leonis - - - *	1	9 59 42.02	N.12 46				
	γ Leonis - - -	2	10 10 59.39	20 40				
	Moon I. u.c. (9.0)		10 30 46.61	13 59	116.06	63.7		
	Moon I. l.c. - -		10 53 49.88	11 20	114.59	62.7		
	χ Leonis - - - *	4.5	10 56 37.37	8 13				
	η Leonis - - -	5.6	11 7 20.67	N.14 12				
14	χ Leonis - - - *	4.5	10 56 37.35	N. 8 13				
	η Leonis - - -	5.6	11 7 20.66	14 12				
	Moon I. u.c. (10.0)		11 16 39.35	8 33	113.77	62.7		
	Moon I. l.c. - -		11 39 23.03	5 40	113.63	62.6		
	ξ^1 Virginis - - *	5	11 36 53.99	9 10				
	β Virginis - - -	3.4	11 42 13.75	N. 2 41				
15	ξ^1 Virginis - - *	5	11 36 53.98	N. 9 10				

MOON-CULMINATING STARS. 425

			At Greenwich Transit.					
337.	Name.	Magnitude.	Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Time of ☾'s Sem. pass. mer.		
			h m s	° ' "	"	"		
15	β Virginis - - -	3.4	11 42 13.75	N. 2 41				
	Moon I. u.c. (11.1)		12 2 9.45	N. 2 40	114.23	62.78		
	Moon I. l.c. - -		12 25 7.57	S. 0 23	115.59	63.14		
	η Virginis - - -	3.4	12 11 35.33	N. 0 14				
	γ ¹ Virginis - - -	4	12 33 25.49	S. 0 33				
16	η Virginis - - -	3.4	12 11 35.33	N. 0 14				
	γ ¹ Virginis - - -	4	12 33 25.49	S. 0 33				
	Moon I. u.c. (12.1)		12 48 26.85	- 3 29	117.76	63.71		
	Moon I. l.c. - -		13 12 17.07	- 6 35	120.75	64.51		
	θ Virginis - - -	4.5	13 1 32.67	4 40				
	α Virginis - - -	1	13 16 38.42	S. 10 18				
17	θ Virginis - - -	4.5	13 1 32.67	S. 4 40				
	α Virginis - - -	1	13 16 38.42	10 18				
	Moon I. u.c. (13.1)		13 36 48.28	9 40	124.59	65.52		
	Moon I. l.c. - -		14 2 10.41	12 42	129.24	66.74		
	κ Virginis - - -	4	14 4 14.39	9 31				
	λ Virginis - - -	4	14 10 19.97	S. 12 37				
18	κ Virginis - - -	4	14 4 14.39	S. 9 31				
	λ Virginis - - -	4	14 10 19.97	12 37				
	Moon I. u.c. (14.1)		14 28 33.02	15 36	134.65	68.14		
	Moon I. l.c. - -		14 56 4.63	18 21	140.72	69.69		
	α ² Libræ - - -	3	14 41 54.31	15 22				
	20 Libræ - - -	3.4	14 54 34.96	S. 24 38				
19	α ² Libræ - - -	3	14 41 54.32	S. 15 22				
	20 Libræ - - -	3.4	14 54 34.97	24 38				
	Moon I. u.c. (15.2)		15 24 51.86	20 52	147.21	71.32		
	π Scorp̄ii - - -	3.4	15 49 2.37	25 38				
	β ¹ Scorp̄ii - - -	2	15 56 0.23	S. 19 21				
20	π Scorp̄ii - - -	3.4	15 49 2.39	S. 25 38				
	β ¹ Scorp̄ii - - -	2	15 56 0.23	19 21				
	Moon II. l.c. - -		15 57 23.84	23 6	154.07	72.96		
	Moon II. u.c. (16.2)		16 28 50.74	25 0	160.32	74.48		
	A Ophiuchi - - -	4.5	17 5 22.15	26 21				
	θ Ophiuchi - - -	3.4	17 12 2.33	S. 24 50				
21	A Ophiuchi - - -	4.5	17 5 22.17	S. 26 21				
	θ Ophiuchi - - -	3.4	17 12 2.35	24 50				
	Moon II. l.c. - -		17 1 27.94	26 28				
	Moon II. u.c. (17.3)		17 35 1.88	27 29				
	γ ² Sagittarii - -	4	17 55 22.64	30 25				
	δ Sagittarii - - -	3.4	18 10 35.67	S. 29 38				
22	γ ² Sagittarii - -	4	17 55 22.67	S.				
	δ Sagittarii - - -	3.4	18 10 35.70					
	Moon II. l.c. - -		18 9 12.91					

426 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of C's R. A. in 1 hour of Long.	Sid. T. of C's R. pass. m.
May 22	Moon II. u.c.	(18 '3)	^h ^m ^s 18 43 37 '25	[°] ['] S. 27 57	171 '87	77 '4
	<i>r</i> Sagittarii - -	4	18 56 47 '65	27 54		
	<i>h</i> ^s Sagittarii - -	4.5	19 26 48 '83	S. 25 14		
23	<i>r</i> Sagittarii - -	4	18 56 47 '68	S. 27 54		
	<i>h</i> ^s Sagittarii - -	4.5	19 26 48 '86	25 14		
	Moon II. l.c.	- -	19 17 49 '67	27 23	169 '87	76 '3
	Moon II. u.c.	(19 '4)	19 51 27 '06	26 18	166 '10	76 '4
	<i>π</i> Capricorni - -	5	20 18 0 '60	18 44		
	<i>ψ</i> Capricorni - -	4.5	20 36 27 '72	S. 25 51		
24	<i>π</i> Capricorni - -	5	20 18 0 '63	S. 18 44		
	<i>ψ</i> Capricorni - -	4.5	20 36 27 '76	25 51		
	Moon II. l.c.	- -	20 24 10 '81	24 45	161 '03	74 '8
	Moon II. u.c.	(20 '4)	20 55 48 '73	22 47	155 '22	73 '3
	<i>ζ</i> Capricorni - -	4	21 17 22 '27	23 7		
	<i>γ</i> Capricorni - -	4	21 31 4 '26	S. 17 24		
25	<i>ζ</i> Capricorni - -	4	21 17 22 '30	S. 23 7		
	<i>γ</i> Capricorni - -	4	21 31 4 '29	17 24		
	Moon II. l.c.	- -	21 26 15 '01	20 27	149 '17	72 '4
	Moon II. u.c.	(21 '4)	21 55 29 '61	17 49	143 '33	70 '7
	<i>θ</i> Aquarii - - -	4.5	22 8 14 '47	8 36		
	<i>σ</i> Aquarii - - -	5	22 22 1 '83	S. 11 31		
26	<i>θ</i> Aquarii - - -	4.5	22 8 14 '50	S. 8 36		
	<i>σ</i> Aquarii - - -	5	22 22 1 '86	11 31		
	Moon II. l.c.	- -	22 23 36 '81	14 57	137 '99	69
	Moon II. u.c.	(22 '5)	22 50 44 '14	11 54	133 '37	68
	<i>ψ</i> ^a Aquarii - - -	5	23 10 29 '53	S. 10 30		
	<i>ψ</i> ^a Aquarii - - -	5	23 10 29 '57	S. 10 30		
27	Moon II. l.c.	- -	23 17 0 '92	8 43	129 '57	67
	Moon II. u.c.	(23 '5)	23 42 37 '43	5 28	126 '66	66
	<i>r</i> Piscium - - -	4.5	23 53 36 '37	S. 6 55		
	<i>t</i> Piscium - - -	6	0 17 2 '62	N. 1 2		
	<i>r</i> Piscium - - -	4.5	23 53 36 '40	S. 6 55		
	<i>t</i> Piscium - - -	6	0 17 2 '64	N. 1 2		
28	Moon II. l.c.	- -	0 7 44 '39	S. 2 9	124 '65	65
	Moon II. u.c.	(24 '5)	0 32 32 '47	N. 1 8	123 '51	65
	<i>m</i> Ceti - - - -	5	0 44 40 '94	S. 2 2		
	<i>e</i> Piscium - - *	5	0 59 58 '60	N. 4 47		
	<i>m</i> Ceti - - - -	5	0 44 40 '97	S. 2 2		
	<i>e</i> Piscium - - *	5	0 59 58 '63	N. 4 47		
29	Moon II. l.c.	- -	0 57 11 '89	4 24	123 '20	65
	Moon II. u.c.	(25 '6)	1 21 52 '36	7 35	123 '67	65
	<i>o</i> Piscium - - *	5	1 36 47 '28	8 20		
	<i>ξ</i> ¹ Ceti - - - -	5	2 4 21 '63	N. 8 5		
	<i>ξ</i> ¹ Ceti - - - -	5	2 4 21 '63	N. 8 5		
	<i>ξ</i> ¹ Ceti - - - -	5	2 4 21 '63	N. 8 5		

MOON-CULMINATING STARS. 427

37.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Time of ☾'s Sem. pass. mer.
y 30	Moon II. <i>l. c.</i>	- -	^h 1 46 ^m 42 ^s 83	N. 10 39	^s 124 85	^s 65 59
	Moon II. <i>u. c.</i>	(26 6)	2 11 51 25	13 34	126 65	66 05
31	Moon II. <i>l. c.</i>	- -	2 37 24 29	N. 16 19	128 93	66 63
	Moon II. <i>u. c.</i>	(27 6)	3 3 27 00	18 50	131 57	67 30
ne 1	Moon II. <i>l. c.</i>	- -	3 30 2 64	N. 21 6	134 38	68 02
	Moon II. <i>u. c.</i>	(28 7)	3 57 11 92	23 6	137 14	68 73
2	Moon II. <i>l. c.</i>	- -	4 24 53 04	N. 24 47	139 65	69 37
3	Moon I. <i>u. c.</i>	(0 2)	4 50 41 63	N. 26 7	141 57	69 89
	Moon I. <i>l. c.</i>	- -	5 19 9 25	27 7	142 90	70 23
4	Moon I. <i>u. c.</i>	(1 2)	5 47 47 85	N. 27 44	143 38	70 36
	Moon I. <i>l. c.</i>	- -	6 16 26 61	27 59	142 92	70 26
5	Moon I. <i>u. c.</i>	(2 3)	6 44 54 24	N. 27 52	141 54	69 93
	Moon I. <i>l. c.</i>	- -	7 13 0 19	27 23	139 32	69 38
6	Moon I. <i>u. c.</i>	(3 3)	7 40 35 35	N. 26 33	136 44	68 67
	Moon I. <i>l. c.</i>	- -	8 7 32 96	25 25	133 10	67 82
7	6 Cancri - - -	5.6	7 53 29 30	N. 28 15		
	λ Cancri - - -	6	8 10 49 63	24 32		
	Moon I. <i>u. c.</i>	(4 3)	8 33 48 79	23 59	129 52	66 90
	Moon I. <i>l. c.</i>	- -	8 59 21 20	22 17	125 90	65 96
	ξ Cancri - - -	5.6	8 59 58 81	22 42		
	q Cancri - - -	6	9 9 52 58	N. 18 24		
8	ξ Cancri - - -	5.6	8 59 58 80	N. 22 42		
	q Cancri - - -	6	9 9 52 58	18 24		
	Moon I. <i>u. c.</i>	(5 4)	9 24 11 02	20 20	122 45	65 05
	Moon I. <i>l. c.</i>	- -	9 48 21 12	18 11	119 30	64 22
	π Leonis - - *	4.5	9 51 36 19	8 49		
	η Leonis - - -	3.4	9 58 26 87	N. 17 33		
9	π Leonis - - *	4.5	9 51 36 19	N. 8 49		
	η Leonis - - -	3.4	9 58 26 87	17 33		
	Moon I. <i>u. c.</i>	(6 4)	10 11 56 00	15 31	60	63 48
	Moon I. <i>l. c.</i>	- -	10 35 1 51	13 21	62	62 89
	ρ Leonis - - *	4	10 24 14 03	10 9		
	k Leonis - - -	6	10 37 47 36	N. 15 3		
10	ρ Leonis - - *	4	10 24 14 03	N. 10 3		
	k Leonis - - -	6	10 37 47 36	15 3		
	Moon I. <i>u. c.</i>	(7 4)	10 57 30	10 42	75	62 46
	Moon I. <i>l. c.</i>	- -	11 1 35	7 26	74	62 21
	ι Leonis - - *	4	11 1 35	11 22		
	υ Leonis - - -	4.5	11 1 35	N. 0 3		

MOON-CULMINATING STARS. 429

37.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Time of ☾'s Sem. pass. mer.
			^h ^m ^s	[°] ['] ["]	^s	^s
e 18	<i>p</i> Sagittarii - -	5	17 37 20·80	S. 27 46		
	Moon II. u.c. (15·7)		18 12 2·54	27 56	175·93	78·23
	<i>φ</i> Sagittarii - -	4.5	18 35 30·97	27 9		
	<i>σ</i> Sagittarii - -	3	18 45 12·02	S. 26 29		
19	<i>φ</i> Sagittarii - -	4.5	18 35 30·98	S. 27 9		
	<i>σ</i> Sagittarii - -	3	18 45 12·03	26 29		
	Moon II. l.c. - -	-	18 47 18·56	27 50	176·35	78·35
	Moon II. u.c. (16·7)		19 22 25·59	27 10	174·43	77·93
	59 Sagittarii - -	5	19 46 58·83	27 36		
	<i>c</i> Sagittarii - -	4.5	19 52 40·19	S. 28 9		
20	59 Sagittarii - -	5	19 46 58·85	S. 27 36		
	<i>c</i> Sagittarii - -	4.5	19 52 40·22	28 9		
	Moon II. l.c. - -	-	19 56 56·84	25 57	170·47	77·03
	Moon II. u.c. (17·8)		20 30 30·86	24 15	165·00	75·77
	<i>η</i> Capricorni - -	5	20 55 9·48	20 30		
	<i>ζ</i> Capricorni - -	4	21 17 23·15	S. 23 7		
21	<i>η</i> Capricorni - -	5	20 55 9·51	S. 20 30		
	<i>ζ</i> Capricorni - -	4	21 17 23·19	23 7		
	Moon II. l.c. - -	-	21 2 53·29	22 7	158·66	74·27
	Moon II. u.c. (18·8)		21 33 57·42	19 37	152·04	72·69
	<i>μ</i> Capricorni - -	5	21 44 26·02	14 19		
	<i>ι</i> Aquarii - - -	4.5	21 57 39·51	S. 14 39		
22	<i>μ</i> Capricorni - -	5	21 44 26·05	S. 14 19		
	<i>ι</i> Aquarii - - -	4.5	21 57 39·54	14 39		
	Moon II. l.c. - -	-	22 3 43·01	16 50	145·64	71·10
	Moon II. u.c. (19·9)		22 32 14·97	13 49	139·81	69·65
	<i>δ</i> Aquarii - - -	3	22 46 1·30	16 41		
	<i>φ</i> Aquarii - - -	5	23 5 54·24	S. 6 56		
23	<i>δ</i> Aquarii - - -	3	22 46 1·33	S. 16 41		
	<i>φ</i> Aquarii - - -	5	23 5 54·27	6 56		
	Moon II. l.c. - -	-	22 59 41·43	10 38	134·75	68·36
	Moon II. u.c. (20·9)		23 26 12·65	7 21	130·61	67·27
	<i>n</i> Piscium - - -	5.6	23 39 34·50	3 40		
	<i>r</i> Piscium - - -	4.5	23 53 37·23	S. 6 55		
24	<i>n</i> Piscium - - -	5.6	23 39 34·53	S. 3		
	<i>r</i> Piscium - - -	4.5	23 53 37·26	6		
	Moon II. l.c. - -	-	23 37 20·09		91	66·43
	Moon II. u.c. (21·9)		0 2 20·11		16	65·82
	<i>m</i> Ceti - - - -	5	0 2 20·11	S. 0		
	<i>ε</i> Piscium - - *	4	0 2 20·12	N. 0		
25	<i>m</i> Ceti - - - -	5	0 2 20·11	S. 0		
	<i>ε</i> Piscium - - *	4	0 2 20·13	N. 0		
	Moon II. l.c. - -	-	0 7 40	N. 0	23·84	65·45

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of C's R. A. in 1 hour of Long.	Sid. Time of Culmination
June 25	Moon II. u.c. (23 '0)		^h ^m ^s 1 6 49 '81	[°] ['] N. 5 51	123 '37	63 '2
	η Piscium - - -	4	1 22 46 '87	14 30		
	ϕ Piscium - - *	5	1 36 48 '06	N. 8 20		
26	η Piscium - - -	4	1 22 46 '90	N. 14 30		
	ϕ Piscium - - *	5	1 36 48 '10	8 20		
	Moon II. l.c. - -	-	1 31 31 '52	8 59	123 '71	65 '41
	Moon II. u.c. (24 '0)		1 56 21 '72	11 58	124 '77	65 '56
	θ^1 Arietis - - -	6	2 9 4 '68	19 9		
	ξ^2 Ceti - - - *	5	2 19 30 '40	N. 7 44		
27	θ^1 Arietis - - -	6	2 9 4 '71	N. 19 9		
	ξ^2 Ceti - - - *	5	2 19 30 '43	7 44		
	Moon II. l.c. - -	-	2 21 28 '49	14 47	126 '45	66 '45
	Moon II. u.c. (25 '0)		2 46 58 '61	17 24	128 '64	66 '55
	δ Arietis - - -	4	3 2 19 '22	18 6		
	γ Arietis - - -	5.6	3 15 11 '64	N. 24 9		
28	Moon II. l.c. - -	-	3 12 57 '16	N. 19 48	131 '17	67 '28
	Moon II. u.c. (26 '1)		3 39 27 '31	21 56	133 '87	67 '38
29	Moon II. l.c. - -	-	4 6 29 '75	N. 23 46	136 '52	68 '6
	Moon II. u.c. (27 '1)		4 34 2 '71	25 18	138 '91	69 '2
30	Moon II. l.c. - -	-	5 2 1 '58	N. 26 30	140 '80	69 '6
	Moon II. u.c. (28 '1)		5 30 19 '21	27 21	142 '00	69 '9
July 1	Moon II. l.c. - -	-	5 58 46 '25	N. 27 50	142 '35	70 '0
	Moon II. u.c. (29 '2)		6 27 12 '06	27 57	141 '79	69 '9
2	Moon I. l.c. - -	-	6 53 6 '49	N. 27 42	140 '40	69 '5
3	Moon I. u.c. (0 '6)		7 20 58 '49	N. 27 6	138 '14	68 '9
	Moon I. l.c. - -	-	7 48 19 '32	26 10	135 '24	68 '2
4	Moon I. u.c. (1 '7)		8 15 2 '37	N. 24 55	131 '88	67 '3
	Moon I. l.c. - -	-	8 41 3 '46	23 23	128 '28	66 '4
5	Moon I. u.c. (2 '7)		9 6 21 '00	N. 21 36	124 '65	65 '4
	Moon I. l.c. - -	-	9 30 55 '73	19 35	121 '17	64 '5
6	Moon I. u.c. (3 '7)		9 54 50 '39	N. 17 22	118 '00	63 '7
	Moon I. l.c. - -	-	10 18 9 '39	14 59	115 '25	62 '5
7	γ Leonis - - -	2	10 10 58 '91	N. 20 40		
	ρ Leonis - - - *	4	10 24 13 '85	10 9		
	Moon I. u.c. (4 '8)		10 40 58 '44	12 27	113 '02	62 '3
	Moon I. l.c. - -	-	11 3 24 '21	9 47	111 '38	61 '5
	χ Leonis - - - *	4.5	10 56 36 '86	8 13		
	η Leonis - - -	5.6	11 7 20 '16	N. 14 12		

MOON-CULMINATING STARS. 431

337.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension <i>in Time.</i>	Declination.	Var. of ☉'s R. A. in 1 hour of Long.	Sid. Time of ☉'s Sem. pass. mer.
			<i>h m s</i>	<i>° ′</i>	<i>″</i>	<i>″</i>
8	χ Leonis - - - *	4.5	10 56 36.85	N. 8 13		
	η Leonis - - -	5.6	11 7 20.15	14 12		
	Moon I. u.c.	(5.8)	11 25 34.13	7 1	110.39	61.68
	Moon I. l.c.	-	11 47 36.30	4 10	110.10	61.62
	β Virginis - - -	3.4	11 42 13.29	2 41		
	π Virginis - - - *	5	11 52 32.07	N. 7 31		
9	β Virginis - - -	3.4	11 42 13.28	N. 2 41		
	π Virginis - - - *	5	11 52 32.06	7 31		
	Moon I. u.c.	(6.8)	12 9 39.39	N. 1 15	110.55	61.77
	Moon I. l.c.	-	12 31 52.55	S. 1 43	111.78	62.14
	γ ¹ Virginis - - -	4	12 33 25.06	0 33		
	ψ Virginis - - -	5.6	12 45 54.17	S. 8 39		
10	γ ¹ Virginis - - -	4	12 33 25.05	S. 0 33		
	ψ Virginis - - -	5.6	12 45 54.17	8 39		
	Moon I. u.c.	(7.8)	12 54 25.47	4 41	113.85	62.74
	Moon I. l.c.	-	13 17 28.33	7 39	116.78	63.57
	θ Virginis - - -	4.5	13 1 32.29	4 40		
	α Virginis - - -	1	13 16 38.07	S. 10 18		
11	θ Virginis - - -	4.5	13 1 32.28	S. 4 40		
	α Virginis - - -	1	13 16 38.06	10 18		
	Moon I. u.c.	(8.9)	13 41 11.76	10 35	120.61	64.63
	Moon I. l.c.	-	14 5 46.63	13 27	125.35	65.92
	κ Virginis - - -	4	14 4 14.16	9 31		
	λ Virginis - - -	4	14 10 19.76	S. 12 37		
12	κ Virginis - - -	4	14 4 14.15	S. 9 31		
	λ Virginis - - -	4	14 10 19.75	12 37		
	Moon I. u.c.	(9.9)	14 31 23.81	16 13	131.00	67.43
	Moon I. l.c.	-	14 58 13.78	18 49	137.46	69.10
	α ² Libræ - - -	3	14 41 54.21	15 22		
	20 Libræ - - -	3.4	14 54 34.90	S. 24 38		
13	α ² Libræ - - -	3	14 41 54.20	S. 15 22		
	20 Libræ - - -	3.4	14 54 34.89	24 38		
	Moon I. u.c.	(10.9)	15 26 25.48	21 14	144.59	70.91
	Moon I. l.c.	-	15 56 5.31	23 22	152.09	72.76
	π Scorp̄ii - - -	3.4	15 49 2.55	25		
	β ¹ Scorp̄ii - - -	2	15 56 0.43	S		
14	π Scorp̄ii - - -	3.4	15 49 2.54			
	β ¹ Scorp̄ii - - -	2	15 56 0.43			
	Moon I. u.c.	(12.0)	16 27 15.53			75.5
	Moon I. l.c.	-	16 59			78
	Α Ophiuchi - - -	4.5	17			
	θ Ophiuchi - - -	3.4	17			
15	Α Ophiuchi - - -	4.5	17			

432 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of C's R. A. in 1 hour of Long.	Sid. Time of pass.
July 15	θ Ophiuchi - - -	3.4	^h 17 ^m 12 ^s 2.92	S. 24 50		
	Moon I. u.c. (13.0)		17 33 45.62	27 33	172.12	77
	Moon I. l.c. - - -	- - -	18 8 36.18	27 58	175.95	78
	γ^s Sagittarii - - -	4	17 55 23.48	30 25		
	δ Sagittarii - - -	3.4	18 10 36.58	S. 29 53		
16	γ^s Sagittarii - - -	4	17 55 23.48	S. 30 25		
	δ Sagittarii - - -	3.4	18 10 36.59	29 53		
	Moon I. u.c. (14.1)		18 43 59.37	27 51	177.50	78
	Moon I. l.c. - - -	- - -	19 19 26.57	27 9	176.62	78
	τ Sagittarii - - -	4	18 56 48.77	27 54		
	h^s Sagittarii - - -	4.5	19 26 50.07	S. 25 14		
17	τ Sagittarii - - -	4	18 56 48.77	S. 27 54		
	h^s Sagittarii - - -	4.5	19 26 50.08	25 14		
	Moon II. u.c. (15.1)		19 57 4.93	25 54	173.38	77
	π Capricorni - - -	5	20 18 1.98	18 44		
	ψ Capricorni - - -	4.5	20 36 29.25	S. 25 51		
18	π Capricorni - - -	5	20 18 1.99	S. 18 44		
	ψ Capricorni - - -	4.5	20 36 29.26	25 51		
	Moon II. l.c. - - -	- - -	20 31 17.28	24 7	168.45	76
	Moon II. u.c. (16.2)		21 4 23.39	21 54	162.44	75
	ζ Capricorni - - -	4	21 17 23.88	23 7		
	δ Capricorni - - -	3.4	21 38 4.82	S. 16 52		
19	ζ Capricorni - - -	4	21 17 23.91	S. 23 7		
	δ Capricorni - - -	3.4	21 38 4.84	16 52		
	Moon II. l.c. - - -	- - -	21 36 13.98	19 16	155.97	73
	Moon II. u.c. (17.2)		22 6.46.80	16 20	149.56	72
	σ Aquarii - - -	5	22 22 3.50	11 31		
	δ Aquarii - - -	3	22 46 2.11	S. 16 41		
20	σ Aquarii - - -	5	22 22 3.52	S. 11 31		
	δ Aquarii - - -	3	22 46 2.13	16 41		
	Moon II. l.c. - - -	- - -	22 36 5.32	13 11	143.63	70
	Moon II. u.c. (18.2)		23 4 16.81	9 51	138.43	69
	n Piscium - - -	5.6	23 39 35.32	S. 3 40		
21	n Piscium - - -	5.6	23 39 35.35	S. 3 40		
	Moon II. l.c. - - -	- - -	23 31 31.16	6 26	134.11	68
	Moon II. u.c. (19.3)		23 57 59.25	2 58	130.73	67
	10 Ceti - - -	6	0 18 17.54	S. 0 57		
	Piscium - - *	6	0 39 49.90	N. 4 27		
22	10 Ceti - - -	6	0 18 17.57	S. 0 57		
	Piscium - - *	6	0 39 49.93	N. 4 27		
	Moon II. l.c. - - -	- - -	0 23 52.55	0 28	128.31	66
	Moon II. u.c. (20.3)		0 49 22.24	3 51	126.80	66
	e Piscium - - *	5	1 0 0.31	N. 4 47		

MOON-CULMINATING STARS. 433

337.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Time of ☾'s Sem. pass. mer.
			^h ^m ^s	[°] [']	^s	^s
July 22	μ Piscium - - *	5	1 21 40 '47	N. 5 18		
23	ε Piscium - - *	5	1 0 0 '34	N. 4 47		
	μ Piscium - - *	5	1 21 40 '50	5 18		
	Moon II. <i>l. c.</i> - -	-	1 14 39 '10	7 8	126 '15	66 '15
	Moon II. <i>u. c.</i> (21 '3)		1 39 53 '07	10 16	126 '30	66 '20
	ξ Ceti - - - *	5	2 4 23 '27	N. 8 5		
24	ξ Ceti - - - *	5	2 4 23 '30	N. 8 5		
	Moon II. <i>l. c.</i> - -	-	2 5 13 '14	13 15	127 '15	66 '43
	Moon II. <i>u. c.</i> (22 '4)		2 30 47 '09	16 1	128 '60	66 '81
	ε Arietis - - -	5	2 49 55 '31	20 41		
	δ Arietis - - -	4	3 2 20 '09	N. 18 6		
25	ε Arietis - - -	5	2 49 55 '34	N. 20 41		
	δ Arietis - - -	4	3 2 20 '12	18 6		
	Moon II. <i>l. c.</i> - -	-	2 56 41 '28	18 34	130 '50	67 '30
	Moon II. <i>u. c.</i> (23 '4)		3 23 0 '31	20 52	132 '71	67 '86
	η Tauri - - -	3	3 37 49 '23	23 36		
	Α Tauri - - -	5	3 55 4 '84	N. 21 38		
26	η Tauri - - -	3	3 37 49 '26	N. 23 36		
	Α Tauri - - -	5	3 55 4 '87	21 38		
	Moon II. <i>l. c.</i> - -	-	3 49 46 '77	22 52	135 '04	68 '46
	Moon II. <i>u. c.</i> (24 '5)		4 17 0 '90	24 35	137 '28	69 '02
	τ Tauri - - -	5	4 32 28 '80	22 38		
	ι Tauri - - -	4.5	4 53 22 '09	N. 21 21		
27	τ Tauri - - -	5	4 32 28 '83	N. 22 38		
	ι Tauri - - -	4.5	4 53 22 '12	21 21		
	Moon II. <i>l. c.</i> - -	-	4 44 40 '39	25 58	139 '23	69 '49
	Moon II. <i>u. c.</i> (25 '5)		5 12 40 '49	27 0	140 '68	69 '83
	l Aurigæ - - -	5	5 28 10 '69	30 23		
	C Tauri - - -	4.5	5 43 5 '53	N. 27 34		
28	Moon II. <i>l. c.</i> - -	-	5 40 53 '99	N. 27 41	141 '45	70 '00
	Moon II. <i>u. c.</i> (26 '5)		6 9 12 '11	29 0	141 '42	69 '96
29	Moon II. <i>l. c.</i> - -	-	6 37 21 '68	28 5	140 '54	69 '71
	Moon II. <i>u. c.</i> (27 '5)		7 5 21 '79	24	138 '85	69 '25
30	Moon II. <i>l. c.</i> - -	-	7 32 54 '16	50	136 '44	68 '60
	Moon II. <i>u. c.</i> (28 '5)		7 59 54 '19	46	133 '48	67 '81
31	Moon II. <i>l. c.</i> - -	-	8 26 16 '11	23	130 '14	66 '92
Aug. 1	Moon I. <i>u. c.</i> (29 '5)		8 49 44 '82	15	126 '79	65 '98
	Moon I. <i>l. c.</i> - -	-	9 14 45 '12	41	123 '29	65 '03
2	Moon I. <i>u. c.</i> (30 '5)		9 39 4 '22	45	119 '95	64 '13

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of G's R. A. in 1 hour of Long.	Sid. Time.
Aug. 2	Moon I. <i>l. c.</i>	- -	^h 10 ^m 2 ^s 45.05	N. 16° 27'	116° 91'	63
3	Moon I. <i>u. c.</i> (2.1)		10 25 51.82	N. 13 59	114.29	62
	Moon I. <i>l. c.</i>	- -	10 48 30.02	11 23	112.17	62
4	Moon I. <i>u. c.</i> (3.1)		11 10 46.03	N. 8 40	110.60	61
	Moon I. <i>l. c.</i>	- -	11 32 46.89	5 52	109.65	61
5	τ Leonis - - -	4	11 19 33.80	N. 3 45		
	ν Virginis - - *	4.5	11 37 29.43	7 27		
	Moon I. <i>u. c.</i> (4.1)		11 54 40.24	2 59	109.36	61
	Moon I. <i>l. c.</i>	- -	12 16 34.27	0 4	109.77	61
	η Virginis - - -	3.4	12 11 34.67	N. 0 14		
	χ Virginis - - -	6	12 30 51.14	S. 7 6		
6	η Virginis - - -	3.4	12 11 34.66	N. 0 14		
	χ Virginis - - -	6	12 30 51.13	S. 7 6		
	Moon I. <i>u. c.</i> (5.2)		12 38 37.64	2 52	110.92	61
	Moon I. <i>l. c.</i>	- -	13 0 59.34	5 49	112.84	61
	k ¹ Virginis - - -	6	12 51 16.62	2 56		
	θ Virginis - - -	4.5	13 1 32.03	S. 4 40		
7	k ¹ Virginis - - -	6	12 51 16.61	S. 2 56		
	θ Virginis - - -	4.5	13 1 32.02	4 40		
	Moon I. <i>u. c.</i> (6.2)		13 23 48.94	8 44	115.57	63
	Moon I. <i>l. c.</i>	- -	13 47 16.32	11 35	119.14	64
	m Virginis - - -	5.6	13 33 5.14	7 53		
	x Virginis - - -	5.6	13 41 2.40	S. 17 19		
8	m Virginis - - -	5.6	13 33 5.13	S. 7 53		
	x Virginis - - -	5.6	13 41 2.38	17 19		
	Moon I. <i>u. c.</i> (7.2)		14 11 31.57	14 22	123.55	63
	Moon I. <i>l. c.</i>	- -	14 36 44.78	17 1	128.79	66
	α ² Libræ - - -	3	14 41 53.91	15 22		
	20 Libræ - - -	3.4	14 54 34.58	S. 24 38		
9	α ² Libræ - - -	3	14 41 53.90	S. 15 22		
	20 Libræ - - -	3.4	14 54 34.56	24 38		
	Moon I. <i>u. c.</i> (8.2)		15 3 5.60	19 31	134.80	68
	Moon I. <i>l. c.</i>	- -	15 30 42.40	21 48	141.43	70
	κ Libræ - - -	5	15 32 35.84	19 9		
	b Scorpïi - - -	5	15 41 13.20	S. 25 15		
10	κ Libræ - - -	5	15 32 35.83	S. 19 9		
	b Scorpïi - - -	5	15 41 13.19	25 15		
	Moon I. <i>u. c.</i> (9.3)		15 59 41.41	23 50	148.45	71
	Moon I. <i>l. c.</i>	- -	16 30 5.27	25 32	155.50	73
	α Scorpïi - - -	1	16 19 27.64	26 4		
	τ Scorpïi - - -	3.4	16 25 47.10	S. 27 52		

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337.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of G's R. A. in 1 hour of Long.	Sid. Time of G's Sem. pass. mer.
			^h ^m ^s	[°] ['] ["]	^s	^s
g. 11	α Scorpii - - -	1	16 19 27.63	S. 26 4		
	r Scorpii - - -	3.4	16 25 47.09	27 52		
	Moon I. u.c. (10.3)		17 1 51.72	26 51	162.13	75.26
	Moon I. l.c. - -	-	17 34 52.40	27 44	167.77	76.59
	θ Ophiuchi - - -	3.4	17 12 2.75	24 50		
	γ^s Sagittarii - - -	4	17 55 23.39	S. 30 25		
12	θ Ophiuchi - - -	3.4	17 12 2.74	S. 24 50		
	γ^s Sagittarii - - -	4	17 55 23.38	30 25		
	Moon I. u.c. (11.4)		18 8 52.19	28 7	171.89	77.52
	Moon I. l.c. - -	-	18 43 30.00	27 58	174.05	77.99
	ϕ Sagittarii - - -	4.5	18 35 31.33	27 9		
	σ Sagittarii - - -	3	18 45 12.43	S. 26 29		
13	ϕ Sagittarii - - -	4.5	18 35 31.32	S. 27 9		
	σ Sagittarii - - -	3	18 45 12.42	26 29		
	Moon I. u.c. (12.4)		19 18 20.96	27 16	174.07	77.95
	Moon I. l.c. - -	-	19 52 59.50	26 1	172.02	77.43
	59 Sagittarii - - -	5	19 46 59.55	27 36		
	c Sagittarii - - -	4.5	19 52 40.95	S. 28 9		
14	59 Sagittarii - - -	5	19 46 59.54	S. 27 36		
	c Sagittarii - - -	4.5	19 52 40.95	28 9		
	Moon I. u.c. (13.4)		20 27 2.73	24 15	168.27	76.52
	Moon I. l.c. - -	-	21 0 13.19	22 0	163.32	75.32
	η Capricorni - - -	5	20 55 10.48	20 30		
	ζ Capricorni - - -	4	21 17 24.28	S. 23 7		
15	η Capricorni - - -	5	20 55 10.48	S. 20 30		
	ζ Capricorni - - -	4	21 17 24.29	23 7		
	Moon I. u.c. (14.5)		21 32 19.84	19 21	157.74	73.98
	ϵ Aquarii - - -	4.5	21 57 40.78	14 39		
	θ Aquarii - - -	4.5	22 8 16.56	S. 8 36		
16	ϵ Aquarii - - -	4.5	21 57 40.74	S. 14 39		
	θ Aquarii - - -	4.5	22 8 16.57	8 36		
	Moon II. l.c. - -	-	22 5 43.75	16 22	151.84	72.59
	Moon II. u.c. (15.5)		22 35 33.07		46.47	71.27
	λ Aquarii - - -	4	22 44 9.37			
	ψ^s Aquarii - - -	5	23 10 31.81			
17	λ Aquarii - - -	4	22 44 9			
	ψ^s Aquarii - - -	5	23 10 31			
	Moon II. l.c. - -	-	23 21		141.70	70.08
	Moon II. u.c. (16.6)		23 16		137.70	69.08
	n Piscium - - -	5.6	23 25			
	r Piscium - - -	4.5				
18	n Piscium - - -	5				
	r Piscium - - -	4				

436 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.				Var. of C's R. A. in 1 hour of Long.	Sd. of C's past.
			Apparent Right Ascension in Time.	Declination.				
Aug. 18	Moon II. <i>l. c.</i>	- -	^h ^m ^s 23 59 29·42	[°] ['] ["] S. 2 34	^s 134·55	^s 68		
	Moon II. <i>u. c.</i> (17·6)	- -	0 26 9·62	N. 1 0	132·29	67		
	Piscium - - *	6	0 39 50·65	4 27				
	ε Piscium - - *	4	0 54 31·84	N. 7 1				
19	Piscium - - *	6	0 39 50·67	N. 4 27				
	ε Piscium - - *	4	0 54 31·86	7 1				
	Moon II. <i>l. c.</i>	- -	0 52 27·95	4 30	130·90	67		
	Moon II. <i>u. c.</i> (18·6)	- -	1 18 34·54	7 53	130·33	67		
	ο Piscium - - *	5	1 36 49·76	8 20				
	γ ¹ Arietis - - -	4·5	1 44 38·03	N. 18 30				
20	ο Piscium - - *	5	1 36 49·79	N. 8 20				
	γ ¹ Arietis - - -	4·5	1 44 38·05	18 30				
	Moon II. <i>l. c.</i>	- -	1 44 38·76	11 6	130·49	67		
	Moon II. <i>u. c.</i> (19·7)	- -	2 10 48·83	14 8	131·29	67		
	π Arietis - - -	5	2 40 14·50	16 47				
	ε Arietis - - -	5	2 49 56·20	N. 20 41				
21	π Arietis - - -	5	2 40 14·53	N. 16 47				
	ε Arietis - - -	5	2 49 56·23	20 41				
	Moon II. <i>l. c.</i>	- -	2 37 11·86	16 56	132·62	67		
	Moon II. <i>u. c.</i> (20·7)	- -	3 3 53·18	19 29	134·32	68		
	g Arietis - - -	5·6	3 15 13·47	24 9				
	η Tauri - - -	3	3 37 50·14	N. 23 36				
22	g Arietis - - -	5·6	3 15 13·50	N. 24 9				
	η Tauri - - -	3	3 37 50·17	23 36				
	Moon II. <i>l. c.</i>	- -	3 30 56·30	21 44	136·22	68		
	Moon II. <i>u. c.</i> (21·7)	- -	3 58 22·60	23 41	138·14	69		
	v ¹ Tauri - - -	5	4 16 35·05	22 26				
	τ Tauri - - -	5	4 32 29·68	N. 22 38				
23	v ¹ Tauri - - -	5	4 16 35·08	N. 22 26				
	τ Tauri - - -	5	4 32 29·71	22 38				
	Moon II. <i>l. c.</i>	- -	4 26 11·05	25 18	139·88	69		
	Moon II. <i>u. c.</i> (22·8)	- -	4 54 18·24	26 35	141·23	70		
	β Tauri - - -	2	5 16 1·01	28 28				
	ι Aurigæ - - -	5	5 28 11·57	N. 30 23				
24	β Tauri - - -	2	5 16 1·04	N. 28 28				
	ι Aurigæ - - -	5	5 28 11·61	30 23				
	Moon II. <i>l. c.</i>	- -	5 22 38·41	27 29	142·02	70		
	Moon II. <i>u. c.</i> (23·8)	- -	5 51 3·97	28 2	142·12	70		
	κ Aurigæ - - -	4	6 5 0·77	29 33				
	ε Geminorum -	3	6 33 55·22	N. 25 17				
25	κ Aurigæ - - -	4	6 5 0·81	N. 29 33				
	ε Geminorum -	3	6 33 55·25	25 17				
	Moon II. <i>l. c.</i>	- -	6 19 26·18	N. 28 12	141·45	70		

MOON-CULMINATING STARS. 437

7.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Time of ☾'s Sem. pass. mer.
25	Moon II. u.c.	(24.8)	^h 6 ^m 47 ^s 35.69	N. 28 1	140.01	69.79
	δ Geminorum -	3.4	7 10 24.01	22 17		
	α ² Geminorum -	3	7 24 12.50	N. 32 14		
26	δ Geminorum -	3.4	7 10 24.04	N. 22 17		
	α ² Geminorum -	3	7 24 12.53	32 14		
	Moon II. l.c.	-	7 15 23.52	27 28	137.86	69.21
	Moon II. u.c.	(25.9)	7 42 41.95	26 35	135.13	68.46
	μ ¹ Cancri - - -	6	7 56 39.23	23 6		
	φ ² Cancri - - -	6	8 16 55.49	N. 27 28		
27	Moon II. l.c.	-	8 9 25.04	N. 25 24	131.99	67.60
	Moon II. u.c.	(26.9)	8 35 28.86	23 55	128.61	66.66
28	Moon II. l.c.	-	9 0 51.52	N. 22 9	125.17	65.70
	Moon II. u.c.	(27.9)	9 25 33.38	20 10	121.83	64.77
29	Moon II. l.c.	-	9 49 36.31	N. 17 58	118.72	63.88
	Moon II. u.c.	(29.0)	10 13 3.94	15 35	115.95	63.10
30	Moon II. l.c.	-	10 36 0.83	N. 13 2	113.61	62.43
31	Moon I. u.c.	(0.3)	10 56 28.86	N. 10 21	111.86	61.91
	Moon I. l.c.	-	11 18 42.69	7 34	110.54	61.55
1	Moon I. u.c.	(1.3)	11 40 44.30	N. 4 43	109.83	61.36
	Moon I. l.c.	-	12 2 41.01	N. 1 47	109.74	61.35
2	Moon I. u.c.	(2.4)	12 24 40.61	S. 1 10	110.31	61.54
	Moon I. l.c.	-	12 46 51.16	4 8	111.57	61.94
3	Moon I. u.c.	(3.4)	13 9 21.12	S. 7 5	113.55	62.53
	Moon I. l.c.	-	13 32 19.20	9 59	116.26	63.33
4	α Virginis - - -	1	13 16 37.54	S. 10 18		
	m Virginis - - -	5.6	13 33 4.87	7 53		
	Moon I. u.c.	(4.4)	13 55 54.36	12 48	119.73	64.33
	Moon I. l.c.	-	14 20 15.59	15 32	123.93	65.51
	λ Virginis - - -	4	14 10 19.14	S. 12 37		
5	λ Virginis - - -	4	14 10 19.13	S. 12 37		
	Moon I. u.c.	(5.5)	14 45 31.56	18 6	116	
	Moon I. l.c.	-	15 11 50.22	20 30		
	20 Libræ - - -	3.4	14 54 34.17	24 38		
	ι ¹ Libræ - - -	5.6	15 2 57.79	S. 19 10		
6	20 Libræ - - -	3.4	14 54 34.16	S. 24 38		
	ι ¹ Libræ - - -	5.6	15 2 57.78	19 10		
	Moon I. u.c.	(6.5)	15 39 18.21	22		
	Moon I. l.c.	-	16 7 59.75	S. 24		

MOON-CULMINATING STARS. 439

37.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Time of ☾'s Sem. pass. mer.
13	<i>n</i> Piscium - - -	5.6	^h ^m ^s 23 39 36.35	[°] ['] S. 3 40	"	"
14	ψ ^s Aquarii - - -	5	23 10 32.18	S. 10 30		
	<i>n</i> Piscium - - -	5.6	23 39 36.36	3 40		
	Moon II. <i>u.c.</i> (14.8)		23 58 12.03	2 40	136.06	68.60
	<i>n</i> Ceti - - - - -	6	0 21 46.07	S. 4 52		
	δ Piscium - - *	5	0 40 16.83	N. 6 42		
15	<i>n</i> Ceti - - - - -	6	0 21 46.09	S. 4 52		
	δ Piscium - - *	5	0 40 16.84	N. 6 42		
	Moon II. <i>l.c.</i> - -		0 25 14.25	0 58	134.45	68.20
	Moon II. <i>u.c.</i> (15.9)		0 52 1.86	4 33	133.62	68.02
	μ Piscium - - *	5	1 21 41.86	5 18		
	ν Piscium - - *	5	1 33 0.21	N. 4 40		
16	μ Piscium - - *	5	1 21 41.88	N. 5 18		
	ν Piscium - - *	5	1 33 0.22	4 40		
	Moon II. <i>l.c.</i> - -		1 18 44.08	8 2	133.54	68.04
	Moon II. <i>u.c.</i> (16.9)		1 45 29.47	11 22	134.13	68.23
	ξ ¹ Ceti - - - - *	5	2 4 24.78	8 5		
	ν Arietis - - - -	5.6	2 29 36.84	N. 21 15		
17	ξ ¹ Ceti - - - - *	5	2 4 24.80	N. 8 5		
	ν Arietis - - - -	5.6	2 29 36.86	21 15		
	Moon II. <i>l.c.</i> - -		2 12 25.42	14 29	135.28	68.58
	Moon II. <i>u.c.</i> (17.9)		2 39 37.90	17 21	136.86	69.03
	δ Arietis - - - -	4	3 2 21.78	18 6		
	g Arietis - - - -	5.6	3 15 14.29	N. 24 9		
18	δ Arietis - - - -	4	3 2 21.81	N. 18 6		
	g Arietis - - - -	5.6	3 15 14.32	24 9		
	Moon II. <i>l.c.</i> - -		3 7 10.98	19 57	138.69	69.55
	Moon II. <i>u.c.</i> (19.0)		3 35 6.72	22 14	140.59	70.08
	A ¹ Tauri - - - -	5	3 55 6.61	21 38		
	ν ¹ Tauri - - - -	5	4 16 35.92	N. 22 26		
19	A ¹ Tauri - - - -	5	3 55 6.64	N. 21 38		
	ν ¹ Tauri - - - -	5	4 16 35.95	22 26		
	Moon II. <i>l.c.</i> - -		4 3 24.67	24 11	142.36	70.57
	Moon II. <i>u.c.</i> (20.0)		4 32 1.88	25 47	143.77	70.96
	ε Tauri - - - -	4.5	4 53 23.85	21 21		
	β Tauri - - - -	2	5 16 1.94	N. 28 28		
20	ε Tauri - - - -	4.5	4 53 23.89	N. 21 21		
	β Tauri - - - -	2	5 16 1.98	28 28		
	Moon II. <i>l.c.</i> - -		0 52.99	0	144.64	71.20
	Moon II. <i>u.c.</i> (21.1)		5 29 50.59	27 50	144.83	71.25
	C Tauri - - - -	4.5	5 43 7.22	27 34		
	κ Aurigæ - - - -	4	6 5 1.09	N. 29 33		

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1837.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Declination.	Var. of G's R. A. in 1 hour of Long.	Sd.	
Sept. 21	C Tauri - - -	4.5	^h 5 ^m 43 ^s 7.35	N. 27 34			
	κ Aurigæ - - -	4	6 5 1.73	29 33			
	Moon II. l. c. - -	-	5 58 45.72	28 17	144.22	71	
	Moon II. u. c. (22.1)	-	6 27 28.76	28 21	142.82	70	
	ε Geminorum -	3	6 33 56.11	25 17			
	τ Geminorum -	5	7 0 47.40	N. 30 30			
	22	ε Geminorum -	3	6 33 56.14	N. 25 17		
		τ Geminorum -	5	7 0 47.44	30 30		
		Moon II. l. c. - -	-	6 55 50.38	28 2	140.67	70
		Moon II. u. c. (23.1)	-	7 23 42.33	27 23	137.90	69
κ Geminorum -		4	7 34 37.61	24 47			
φ Geminorum -	5	7 43 32.57	N. 27 11				
23	κ Geminorum -	4	7 34 37.64	N. 24 47			
	φ Geminorum -	5	7 43 32.61	27 11			
	Moon II. l. c. - -	-	7 50 58.13	26 23	134.67	68	
	Moon II. u. c. (24.2)	-	8 17 33.28	25 5	131.16	67	
	γ Cancrī - - -	5	8 33 52.04	22 3			
	ρ ⁴ Cancrī - - -	6	8 45 54.01	N. 28 33			
24	γ Cancrī - - -	5	8 33 52.06	N. 22 3			
	ρ ⁴ Cancrī - - -	6	8 45 54.04	28 33			
	Moon II. l. c. - -	-	8 43 25.62	23 30	127.56	66	
	Moon II. u. c. (25.2)	-	9 8 35.13	21 40	124.04	65	
	λ Leonis - - -	4.5	9 22 25.82	23 41			
	ο Leonis - - - *	4	9 32 27.85	N. 10 38			
25	Moon II. l. c. - -	-	9 33 3.52	N. 19 36	120.74	64	
	Moon II. u. c. (26.2)	-	9 56 54.19	17 19	117.77	63	
26	Moon II. l. c. - -	-	10 20 11.70	N. 14 52	115.23	63	
	Moon II. u. c. (27.3)	-	10 43 1.55	12 16	113.17	62	
27	Moon II. l. c. - -	-	11 5 30.01	N. 9 32	111.66	61	
	Moon II. u. c. (28.3)	-	11 27 43.81	6 42	110.74	61	
28	Moon II. l. c. - -	-	11 49 50.12	N. 3 47	110.42	61	
	Moon II. u. c. (29.3)	-	12 11 56.48	N. 0 48	110.75	61	
29	Moon I. l. c. - -	-	12 32 6.84	S. 2 12	111.67	61	
30	Moon I. u. c. (0.7)	-	12 54 35.86	S. 5 12	113.29	62	
	Moon I. l. c. - -	-	13 17 28.59	8 11	115.61	63	
Oct. 1	Moon I. u. c. (1.7)	-	13 40 53.26	S. 11 6	118.62	63	
	Moon I. l. c. - -	-	14 4 58.20	13 55	122.31	64	
2	Moon I. u. c. (2.7)	-	14 29 51.38	S. 16 37	126.65	66	
	Moon I. l. c. - -	-	14 55 40.12	S. 19 9	131.56	67	

MOON-CULMINATING STARS. 441

337.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Time of ☾'s Sem. pass. mer.
			^h ^m ^s	[°] [']	^s	^s
3	α ² Libræ - - -	3	14 41 53.29	S. 15 22		
	20 Libræ - - -	3.4	14 54 33.87	24 38		
	Moon I. u.c.	(3.8)	15 22 30.52	21 29	136.91	68.97
	Moon I. l.c.	-	15 50 26.77	23 33	142.50	70.44
	π Scorp̄ii - - -	3.4	15 49 1.46	25 38		
	β ¹ Scorp̄ii - - -	2	15 55 59.40	S. 19 21		
4	π Scorp̄ii - - -	3.4	15 49 1.45	S. 25 38		
	β ¹ Scorp̄ii - - -	2	15 55 59.39	19 21		
	Moon I. u.c.	(4.8)	16 19 30.27	25 18	148.06	71.86
	Moon I. l.c.	-	16 49 38.83	26 43	153.27	73.19
	τ Scorp̄ii - - -	3.4	16 25 46.23	27 52		
	A Ophiuchi - - -	4.5	17 5 21.65	S. 26 21		
5	τ Scorp̄ii - - -	3.4	16 25 46.21	S. 27 52		
	A Ophiuchi - - -	4.5	17 5 21.63	26 21		
	Moon I. u.c.	(5.8)	17 20 45.91	27 43	157.75	74.31
	Moon I. l.c.	-	17 52 40.59	28 17	161.15	75.14
	γ ² Sagittarii - - -	4	17 55 22.52	30 25		
	δ Sagittarii - - -	3.4	18 10 35.69	S. 29 53		
6	γ ² Sagittarii - - -	4	17 55 22.50	S. 30 25		
	δ Sagittarii - - -	3.4	18 10 35.67	29 53		
	Moon I. u.c.	(6.9)	18 25 7.93	28 23	163.16	75.62
	Moon I. l.c.	-	18 57 50.30	28 0	163.64	75.73
	σ Sagittarii - - -	3	18 45 11.67	26 29		
	τ Sagittarii - - -	4	18 56 48.08	S. 27 54		
7	σ Sagittarii - - -	3	18 45 11.65	S. 26 29		
	τ Sagittarii - - -	4	18 56 48.07	27 54		
	Moon I. u.c.	(7.9)	19 30 29.26	27 8	162.61	75.46
	Moon I. l.c.	-	20 2 47.67	25 47	160.26	74.86
	c Sagittarii - - -	4.5	19 52 40.37	28 9		
	σ Capricorni - - -	5.6	20 10 1.68	S. 19 37		
8	c Sagittarii - - -	4.5	19 52 40.36	S. 28 9		
	σ Capricorni - - -	5.6	20 10 1.66	19 37		
	Moon I. u.c.	(9.0)	20 34 31.62	23 29	156.93	74.02
	Moon I. l.c.	-	21 5 31.48	21 41	152.98	73.01
	η Capricorni - - -	5	21 55 10.17	22 50		
	ξ Capricorni - - -	4	21 54 21.07	S. 22 7		
9	η Capricorni - - -	5	21 55 10.17	22 50		
	ξ Capricorni - - -	4	21 54 21.07	22 7		
	Moon I. u.c.	(10.0)	22 18 10.17	11	148.81	71.94
	Moon I. l.c.	-	22 48 10.17	17	144.76	70.89
	ι Aquarii - - -	4.5	22 48 10.17	30		
	θ Aquarii - - -	4.5	22 48 10.17	36		
10	ι Aquarii - - -	4.5	22 48 10.17	30		

442 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Declination.	Var. of C's R. A. in 1 hour of Long.	S.M. of C's pass.	
Oct. 10	θ Aquarii - - -	4.5	^h 22 ^m 8 ^s 16.57	S. 8 36			
	Moon I. u.c. (11.1)		22 33 37.89	13 8	141.08	69	
	Moon I. l.c. - -		23 1 31.47	9 46	137.97	69	
	λ Aquarii - - -	4	22 44 9.55	8 27			
	ψ^2 Aquarii - - -	5	23 10 32.18	S. 10 30			
11	λ Aquarii - - -	4	22 44 9.54	S. 8 27			
	ψ^2 Aquarii - - -	5	23 10 32.17	10 30			
	Moon I. u.c. (12.1)		23 28 51.89	6 17	135.56	68	
	Moon I. l.c. - -		23 55 47.89	2 42	133.91	68	
	n Piscium - - -	5.6	23 39 36.44	3 40			
12	r Piscium - - -	4.5	23 53 39.29	S. 6 55			
	n Piscium - - -	5.6	23 39 36.43	S. 3 40			
	r Piscium - - -	4.5	23 53 39.29	S. 6 55			
	Moon I. u.c. (13.1)		0 22 28.91	N. 0 54	133.06	67	
	Moon I. l.c. - -		0 49 4.34	4 28	132.98	67	
13	Piscium - - *	6	0 39 51.39	4 27			
	ϵ Piscium - - *	4	0 54 32.66	N. 7 1			
	Moon II. u.c. (14.2)		1 17 59.10	7 58	133.66	67	
	η Piscium - - -	4	1 22 49.54	14 30			
	γ^1 Arietis - - -	4.5	1 44 39.11	N. 18 30			
14	η Piscium - - -	4	1 22 49.55	N. 14 30			
	γ^1 Arietis - - -	4.5	1 44 39.13	18 30			
	Moon II. l.c. - -		1 44 50.37	11 18	134.99	68	
	Moon II. u.c. (15.2)		2 12 0.88	14 28	136.84	68	
	π Arietis - - -	5	2 40 15.81	16 47			
15	ϵ Arietis - - -	5	2 49 57.58	N. 20 41			
	π Arietis - - -	5	2 40 15.83	N. 16 47			
	Moon II. l.c. - -		2 39 35.86	17 24	139.05	69	
	Moon II. u.c. (16.2)		3 7 38.68	20 2	141.44	70	
	η Tauri - - -	3	3 37 51.72	23 36			
16	A ¹ Tauri - - -	5	3 55 7.34	N. 21 38			
	η Tauri - - -	3	3 37 51.74	N. 23 36			
	A ¹ Tauri - - -	5	3 55 7.36	21 38			
	Moon II. l.c. - -		3 36 10.20	22 22	143.79	70	
	Moon II. u.c. (17.3)		4 5 8.45	24 21	145.85	71	
17	τ Tauri - - -	5	4 32 31.38	22 38			
	ϵ Tauri - - -	4.5	4 53 24.67	N. 21 21			
	Moon II. l.c. - -		4 34 28.53	N. 25 57	147.39	71	

MOON-CULMINATING STARS. 443

837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of C's R. A. in 1 hour of Long.	Sid. Time of C's Sem. pass. mer.
t. 17	Moon II. u.c. (18°3)		^h ^m ^s 5 4 2·89	N.27 10	148°19	71°99
	β Tauri - - - -	2	5 16 2·87	28 28		
	C Tauri - - - -	4.5	5 43 8·22	N.27 34		
18	β Tauri - - - -	2	5 16 2·90	N.28 28		
	C Tauri - - - -	4.5	5 43 8·26	27 34		
	Moon II. l.c. - -	-	5 33 41·65	27 58	148°11	72°01
	Moon II. u.c. (19°3)		6 3 13·76	28 22	147°08	71°78
	ε Geminorum -	3	6 33 57·02	N.25 17		
19	ε Geminorum -	3	6 33 57·05	N.25 17		
	Moon II. l.c. - -	-	6 32 27·85	28 22	145°12	71°31
	Moon II. u.c. (20°4)		7 1 13·48	27 59	142°36	70°63
	α ² Geminorum -	3	7 24 14·34	32 14		
	κ Geminorum -	4	7 34 38·50	N.24 47		
20	α ² Geminorum -	3	7 24 14·37	N.32 14		
	κ Geminorum -	4	7 34 38·54	24 47		
	Moon II. l.c. - -	-	7 29 21·93	27 15	138°97	69°76
	Moon II. u.c. (21°4)		7 56 47·00	26 11	135°16	68°77
	λ Cancri - - - -	6	8 10 52·07	24 32		
	γ Cancri - - - -	5	8 33 52·86	N.22 3		
21	λ Cancri - - - -	6	8 10 52·10	N.24 32		
	γ Cancri - - - -	5	8 33 52·89	22 3		
	Moon II. l.c. - -	-	8 23 25·00	24 48	131°16	67°70
	Moon II. u.c. (22°4)		8 49 14·97	23 9	127°18	66°62
	ξ Cancri - - - -	5.6	9 0 0·69	22 42		
	λ Leonis - - - -	4.5	9 22 26·58	N.23 41		
22	ξ Cancri - - - -	5.6	9 0 0·72	N.22 42		
	λ Leonis - - - -	4.5	9 22 26·61	23 41		
	Moon II. l.c. - -	-	9 14 18·17	21 15	123°40	65°56
	Moon II. u.c. (23°5)		9 38 37·79	19 7	119°94	64°57
	α Leonis - - - *	1	9 59 42·89	12 46		
	γ Leonis - - - -	2	10 11 0·16	N.20 40		
23	α Leonis - - - *	1	9 59 42·92	N.12 1		
	γ Leonis - - - -	2	10 11 0·19	26 5		
	Moon II. l.c. - -	-	10 2 18·53	16 1	119°93	63°70
	Moon II. u.c. (24°5)		10 25 26·11	14 1	117°44	62°95
	k Leonis - - - -	6	10 37 48·15	15 1		
	d Leonis - - - *	5	10 52 18·15	N. 4		
24	k Leonis - - - -	6	10 37 48·15	S.15 1		
	d Leonis - - - *	5	10 52 18·15	15 1		
	Moon II. l.c. - -	-	10 48 11·15	11 1		62°37
	Moon II. u.c. (25°5)		11 10 11·15	8 1		61°96
	τ Leonis - - - -	4	11 19 11·15	8 1		
	ν Virginis - - *	4.5	11 37 11·15	N. 7		

444 MOON-CULMINATING STARS.

1837.	Name.	Mag-nitude.	At Greenwich Transit.		
			Apparent Right Ascension in Time.	Declination.	Var. of ϵ 's R. A. in 1 hour of Long.
Oct. 25	Moon II. <i>l. c.</i>	- -	^h 11 ^m 32 ^s 39.51	N. 6° 4'	110° 59'
	Moon II. <i>u. c.</i>	(26.6)	11 54 46.00	3 8	110° 61'
26	Moon II. <i>l. c.</i>	- -	12 16 56.94	N. 0 8	111° 33'
	Moon II. <i>u. c.</i>	(27.6)	12 39 20.80	S. 2 53	112° 76'
27	Moon II. <i>l. c.</i>	- -	13 2 6.08	S. 5 54	114° 91'
	Moon II. <i>u. c.</i>	(28.6)	13 25 21.55	8 54	117° 79'
28	Moon II. <i>l. c.</i>	- -	13 49 15.87	S. 11 50	121° 38'
	Moon II. <i>u. c.</i>	(29.7)	14 13 57.37	14 41	125° 65'
29	Moon I. <i>l. c.</i>	- -	14 37 19.79	S. 17 23	130° 30'
30	Moon I. <i>u. c.</i>	(1.0)	15 3 55.14	S. 19 54	135° 66'
	Moon I. <i>l. c.</i>	- -	15 31 36.89	22 11	141° 33'
31	Moon I. <i>u. c.</i>	(2.1)	16 0 27.10	S. 24 11	147° 03'
	Moon I. <i>l. c.</i>	- -	16 30 24.48	25 51	152° 45'
Nov. 1	Moon I. <i>u. c.</i>	(3.1)	17 1 23.06	S. 27 8	157° 17'
	Moon I. <i>l. c.</i>	- -	17 33 12.30	27 59	160° 82'
2	θ Ophiuchi - -	3.4	17 12 1.58	S. 24 50	
	γ^s Sagittarii - -	4	17 55 22.12	30 25	
	Moon I. <i>u. c.</i>	(4.2)	18 5 37.10	28 22	163° 05'
	Moon I. <i>l. c.</i>	- -	18 38 19.25	28 16	163° 69'
	ϕ Sagittarii - -	4.5	18 35 30.13	27 9	
	σ Sagittarii - -	3	18 45 11.25	S. 26 29	
3	ϕ Sagittarii - -	4.5	18 35 30.12	S. 27 9	
	σ Sagittarii - -	3	18 45 11.24	26 29	
	Moon I. <i>u. c.</i>	(5.2)	19 10 59.26	27 41	162° 71'
	Moon I. <i>l. c.</i>	- -	19 43 18.60	26 37	160° 29'
	h^s Sagittarii - -	4.5	19 26 49.12	25 14	
	c Sagittarii - -	4.5	19 52 39.92	S. 28 9	
4	h^s Sagittarii - -	4.5	19 26 49.11	S. 25 14	
	c Sagittarii - -	4.5	19 52 39.90	28 9	
	Moon I. <i>u. c.</i>	(6.2)	20 15 1.86	25 6	156° 77'
	Moon I. <i>l. c.</i>	- -	20 45 58.10	23 11	152° 52'
	ψ Capricorni - -	4.5	20 36 28.72	25 51	
	η Capricorni - -	5	20 55 9.77	S. 20 30	
5	ψ Capricorni - -	4.5	20 36 28.70	S. 25 51	
	η Capricorni - -	5	20 55 9.75	20 30	
	Moon I. <i>u. c.</i>	(7.3)	21 16 1.17	20 53	147° 98'
	Moon I. <i>l. c.</i>	- -	21 45 9.75	18 15	143° 49'
	ϵ Capricorni - -	5	21 27 59.49	20 11	
	δ Capricorni - -	3.4	21 38 4.78	S. 16 52	

MOON-CULMINATING STARS. 445

7.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of G's R. A. in 1 hour of Long.	Sid. Time of G's Sem. pass. mer.
			^h ^m ^s	[°] ['] ^s		
6	ε Capricorni - - -	5	21 27 59.48	S. 20 11		
	δ Capricorni - - -	3.4	21 38 4.77	16 52		
	Moon I. u.c. (8.3)		22 13 26.36	15 21	139.36	69.62
	Moon I. l.c. - - -	-	22 40 56.67	12 14	135.80	68.67
	σ Aquarii - - -	5	22 22 3.80	11 31		
	λ Aquarii - - -	4	22 44 9.30	S. 8 27		
7	σ Aquarii - - -	5	22 22 3.79	S. 11 31		
	λ Aquarii - - -	4	22 44 9.29	8 27		
	Moon I. u.c. (9.3)		23 7 48.34	8 57	132.94	67.89
	Moon I. l.c. - - -	-	23 34 10.47	5 33	130.88	67.32
	n Piscium - - -	5.6	23 39 36.30	S. 3 40		
8	n Piscium - - -	5.6	23 39 36.29	S. 3 40		
	Moon I. u.c. (10.4)		0 0 12.85	S. 2 5	129.66	66.96
	Moon I. l.c. - - -	-	0 26 5.57	N. 1 24	129.27	66.84
	l Piscium - - -	6	0 17 5.63	1 2		
	Piscium - - *	6	0 39 51.40	N. 4 27		
9	l Piscium - - -	6	0 17 5.62	N. 1 2		
	Piscium - - *	6	0 39 51.40	4 27		
	Moon I. u.c. (11.4)		0 51 58.60	4 52	129.70	66.92
	Moon I. l.c. - - -	-	1 18 1.40	8 16	130.89	67.22
	μ Piscium - - *	5	1 21 42.32	5 18		
	ν Piscium - - *	5	1 33 0.73	N. 4 40		
10	μ Piscium - - *	5	1 21 42.32	N. 5 18		
	ν Piscium - - *	5	1 33 0.73	4 40		
	Moon I. u.c. (12.4)		1 44 22.69	11 32	132.77	67.70
	Moon I. l.c. - - -	-	2 11 9.97	14 37	135.20	68.33
	ξ ¹ Ceti - - - *	5	2 4 25.46	8 5		
	ν Arietis - - -	5.6	2 29 37.71	N. 21 15		
11	ξ ¹ Ceti - - - *	5	2 4 25.46	N. 8 5		
	ν Arietis - - -	5.6	2 29 37.71	21 15		
	Moon I. u.c. (13.5)		2 38 29.05	17 30	132.04	69.00
	Moon I. l.c. - - -	-	3 6 23.63	20 2	131.67	68.00
	δ Arietis - - -	4	3 2 22.80	18 2		
	g Arietis - - -	5.6	3 15 15.41	N. 24		
12	δ Arietis - - -	4	3 2 22.81	N. 18		
	g Arietis - - -	5.6	3 15 15.43	24		
	Moon II. u.c. (14.5)		3 37 15.86	22		
	α ¹ Tauri - - -	5	3 55 7.90	21		
	ν ¹ Tauri - - -	5	4 16 37.31	N. 22		
13	α ¹ Tauri - - -	5	3 55 7.92	N. 21		
	ν ¹ Tauri - - -	5	4 16 37.33	22		
	Moon II. l.c. - - -	-	4 6 22.45	21		
	Moon II. u.c. (15.6)		4 35 57.41	N. 21		

1837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of G's R. A. in 1 hour of Long.	Sub- sidi- ary par.
Nov. 13	α Tauri - - -	5.6	^h 5 ^m 9 ^s 32.29	N. 21 55		
	β Tauri - - -	2	5 16 3.63	28 28		
14	α Tauri - - -	5.6	5 9 32.31	N. 21 55		
	β Tauri - - -	2	5 16 3.66	28 28		
	Moon II. <i>l. c.</i> - -	-	5 5 51.74	27 10	150.03	71
	Moon II. <i>u. c.</i> (16.6)	-	5 35 53.95	27 57	150.15	71
	κ Aurigæ - - -	4	6 5 3.53	29 33		
	μ Geminorum -	3	6 13 9.70	N. 22 35		
15	κ Aurigæ - - -	4	6 5 3.56	N. 29 33		
	μ Geminorum -	3	6 13 9.73	22 35		
	Moon II. <i>l. c.</i> - -	-	6 5 50.81	28 19	149.14	71
	Moon II. <i>u. c.</i> (17.6)	-	6 35 29.04	28 16	147.05	71
	τ Geminorum -	5	7 0 49.34	30 30		
	δ Geminorum -	3.4	7 10 26.62	N. 22 17		
16	τ Geminorum -	5	7 0 49.37	N. 30 30		
	δ Geminorum -	3.4	7 10 26.65	22 17		
	Moon II. <i>l. c.</i> - -	-	7 4 36.33	27 50	144.02	70
	Moon II. <i>u. c.</i> (18.7)	-	7 33 2.64	27 2	140.27	69
	ζ Cancri - - -	5.6	7 53 32.97	28 15		
	λ Cancri - - -	6	8 10 53.01	N. 24 32		
17	ζ Cancri - - -	5.6	7 53 33.01	N. 28 15		
	λ Cancri - - -	6	8 10 53.04	24 32		
	Moon II. <i>l. c.</i> - -	-	8 0 40.94	25 54	136.06	68
	Moon II. <i>u. c.</i> (19.7)	-	8 27 27.25	24 28	131.65	67
	ρ^A Cancri - - -	6	8 45 55.86	28 33		
	ξ Cancri - - -	5.6	9 0 1.62	N. 22 42		
18	ρ^A Cancri - - -	6	8 45 55.90	N. 28 33		
	ξ Cancri - - -	5.6	9 0 1.65	22 42		
	Moon II. <i>l. c.</i> - -	-	8 53 20.73	22 45	127.29	66
	Moon II. <i>u. c.</i> (20.7)	-	9 18 23.15	20 48	123.17	65
	ν Leonis - - -	5.6	9 49 29.49	13 13		
	η Leonis - - -	3.4	9 58 28.92	N. 17 33		
19	ν Leonis - - -	5.6	9 49 29.53	N. 13 13		
	η Leonis - - -	3.4	9 58 28.95	17 33		
	Moon II. <i>l. c.</i> - -	-	9 42 38.31	18 38	119.44	64
	Moon II. <i>u. c.</i> (21.8)	-	10 6 11.68	16 17	116.22	63
	ρ Leonis - - -	4	10 24 15.75	10 9		
	k Leonis - - -	6	10 37 48.93	N. 15 3		
20	ρ Leonis - - -	4	10 24 15.78	N. 10 9		
	k Leonis - - -	6	10 37 48.96	15 3		
	Moon II. <i>l. c.</i> - -	-	10 29 9.85	13 47	113.58	62
	Moon II. <i>u. c.</i> (22.8)	-	10 51 40.27	11 9	111.60	62
	n Leonis - - -	5.6	11 7 21.63	N. 14 12		

MOON-CULMINATING STARS. 447

337.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Time of ☾'s Sem. pass. mer.
			^h ^m ^s	[°] [']	^s	^s
ov. 20	♄ Leonis - - -	4	11 19 35.25	N. 3 45		
21	♊ Leonis - - -	5.6	11 7 21.66	N. 14 12		
	♄ Leonis - - -	4	11 19 35.28	3 45		
	Moon II. <i>l. c.</i> - -	-	11 13 50.88	8 23	110.29	61.79
	Moon II. <i>u. c.</i> (23.8)		11 35 50.10	5 33	109.70	61.59
	♋ Virginis - - *	5	11 52 33.04	7 31		
	♏ Virginis - - -	3.4	12 11 35.65	N. 0 14		
22	♋ Virginis - - *	5	11 52 33.07	N. 7 31		
	♏ Virginis - - -	3.4	12 11 35.68	0 14		
	Moon II. <i>l. c.</i> - -	-	11 57 46.63	N. 2 38	109.84	61.60
	Moon II. <i>u. c.</i> (24.9)		12 19 49.37	S. 0 20	110.74	61.82
	γ ¹ Virginis - - -	4	12 33 25.61	0 33		
	ψ Virginis - - -	5.6	12 45 54.61	S. 8 39		
23	γ ¹ Virginis - - -	4	12 33 25.64	S. 0 33		
	ψ Virginis - - -	5.6	12 45 54.64	8 39		
	Moon II. <i>l. c.</i> - -	-	12 42 7.63	3 20	112.43	62.26
	Moon II. <i>u. c.</i> (25.9)		13 4 50.91	6 20	114.91	62.93
	α Virginis - - -	1	13 16 38.24	10 18		
	♌ Virginis - - -	5.6	13 33 5.44	S. 7 53		
24	Moon II. <i>l. c.</i> - -	-	13 28 8.78	S. 9 18	118.20	63.81
	Moon II. <i>u. c.</i> (26.9)		13 52 10.88	12 14	122.28	64.90
25	Moon II. <i>l. c.</i> - -	-	14 17 6.65	S. 15 3	127.14	66.18
	Moon II. <i>u. c.</i> (27.9)		14 43 4.90	17 44	132.68	67.63
26	Moon II. <i>l. c.</i> - -	-	15 10 12.99	S. 20 15	138.75	69.20
	Moon II. <i>u. c.</i> (29.0)		15 38 36.10	22 31	145.13	70.83
27	Moon II. <i>l. c.</i> - -	-	16 8 16.04	S. 24 29	151.50	72.42
28	Moon I. <i>u. c.</i> (0.4)		16 36 42.32	S. 26 6	157.18	73.90
	Moon I. <i>l. c.</i> - -	-	17 8 39.75	27 18	162.20	75.18
29	Moon I. <i>u. c.</i> (1.5)		17 41 29.63	S. 28 2	165.84	76.26
	Moon I. <i>l. c.</i> - -	-	18 14 52.96	28 17	167.72	77.17
30	Moon I. <i>u. c.</i> (2.5)		18 48 27.29	S. 30 1	167.67	77.17
	Moon I. <i>l. c.</i> - -	-	19 21 49.59	31 1	165.75	77.17
ec. 1	Moon I. <i>u. c.</i> (3.6)		19 54 39.06	S. 32 1	169.26	77.17
	Moon I. <i>l. c.</i> - -	-	20 26 39.44	33 1	171.83	77.17
2	♐ Capricorni - -	6	20 19 58.98	S. 34 1	174.40	77.17
	ψ Capricorni - -	4.5	20 36 28.37	35 1	176.97	77.17
	Moon I. <i>u. c.</i> (4.6)		20 57 40.16	36 1	179.54	77.17
	Moon I. <i>l. c.</i> - -	-	21 27 36.72	37 1	182.11	77.17

448 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.				Var. of G's R. A. in 1 hour of Long.	S.A. d (1) p.m.
			Apparent Right Ascension in Time.	Declination.				
			h m s	° '	"			
Dec. 2	ζ Capricorni - -	4	21 17 23.31	S. 23 7				
	γ Capricorni - -	4	21 31 5.42	17 24				
3	ζ Capricorni - -	4	21 17 23.30	S. 23 7				
	γ Capricorni - -	4	21 31 5.41	17 24				
	Moon I. u.c. (5.6)		21 56 29.71	16 57	141.87	70.2		
	Moon I. l.c. - -		22 24 23.69	13 58	137.24	69.1		
	θ Aquarii - - -	4.5	22 8 15.95	8 36				
	σ Aquarii - - -	5	22 22 3.49	S. 11 31				
4	θ Aquarii - - -	4.5	22 8 15.94	S. 8 36				
	σ Aquarii - - -	5	22 22 3.48	11 31				
	Moon I. u.c. (6.7)		22 51 26.22	10 48	133.32	68.1		
	Moon I. l.c. - -		23 17 46.64	7 31	130.23	67.1		
	ψ ³ Aquarii - - -	5	23 10 31.69	S. 10 30				
	κ ¹ Piscium - - -	5.6	23 18 37.32	N. 0 22				
5	ψ ³ Aquarii - - -	5	23 10 31.68	S. 10 30				
	κ ¹ Piscium - - -	5.6	23 18 37.31	N. 0 22				
	Moon I. u.c. (7.7)		23 43 35.32	S. 4 8	128.03	66.1		
	Moon I. l.c. - -		0 9 3.09	0 44	126.75	66.1		
	s Piscium - - -	5	23 57 2.54	S. 6 37				
	t Piscium - - -	6	0 17 5.43	N. 1 2				
6	s Piscium - - -	5	23 57 2.53	S. 6 37				
	t Piscium - - -	6	0 17 5.42	N. 1 2				
	Moon I. u.c. (8.7)		0 34 20.79	2 40	126.35	66		
	Moon I. l.c. - -		0 59 38.99	6 1	126.82	66		
	ε Piscium - - *	4	0 54 32.57	N. 7 1				
7	ε Piscium - - *	4	0 54 32.56	N. 7 1				
	Moon I. u.c. (9.8)		1 25 7.68	9 17	128.09	66		
	Moon I. l.c. - -		1 50 56.00	12 24	130.08	67		
	ο Piscium - - *	5	1 36 50.87	8 20				
	γ ¹ Arietis - - -	4.5	1 44 39.26	N. 18 30				
8	ο Piscium - - *	5	1 36 50.87	N. 8 20				
	γ ¹ Arietis - - -	4.5	1 44 39.26	18 30				
	Moon I. u.c. (10.8)		2 17 11.94	15 21	132.67	67		
	Moon I. l.c. - -		2 44 1.90	18 6	135.71	68		
	π Arietis - - -	5	2 40 16.25	16 47				
	ε Arietis - - -	5	2 49 58.09	N. 20 41				
9	π Arietis - - -	5	2 40 16.25	N. 16 47				
	ε Arietis - - -	5	2 49 58.09	20 41				
	Moon I. u.c. (11.8)		3 11 30.02	20 35	139.00	69		
	Moon I. l.c. - -		3 39 37.85	22 47	142.28	70		
	η Tauri - - - -	3	3 37 52.50	23 36				
	Α ¹ Tauri - - - -	5	3 55 8.21	N. 21 38				

MOON-CULMINATING STARS. 449

37.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☾'s R. A. in 1 hour of Long.	Sid. Time of ☾'s Sem. pass. mer.
			^h ^m ^s	[°] [']	["]	["]
10	η Tauri - - -	3	3 37 52.50	N.23 36		
	Α ¹ Tauri - - -	5	3 55 8.21	21 38		
	Moon I. u.c. (12.9)		4 8 23.66	24 38	145.28	70.89
	Moon I. l.c. - -		4 37 42.26	26 8	147.70	71.49
	τ Tauri - - -	5	4 32 32.45	22 38		
	ε Tauri - - -	4.5	4 53 25.83	N.21 21		
11	τ Tauri - - -	5	4 32 32.46	N.22 38		
	ε Tauri - - -	4.5	4 53 25.84	21 21		
	Moon I. u.c. (13.9)		5 7 25.00	27 14	149.26	71.87
	ι Aurigæ - - -	5	5 28 14.89	30 23		
	Ϸ Tauri - - -	4.5	5 43 9.68	N.27 34		
12	ι Aurigæ - - -	5	5 28 14.90	N.30 23		
	Ϸ Tauri - - -	4.5	5 43 9.70	27 34		
	Moon II. l.c. - -		5 39 44.29	27 57	149.75	72.00
	Moon II. u.c. (14.9)		6 9 38.18	28 14	149.02	71.83
	ε Geminorum -	3	6 33 58.65	25 17		
	ω ¹ Geminorum -	6	6 52 32.82	N.24 27		
13	ε Geminorum -	3	6 33 58.67	N.25 17		
	ω ¹ Geminorum -	6	6 52 32.84	24 27		
	Moon II. l.c. - -		6 39 16.29	28 8	147.14	71.38
	Moon II. u.c. (16.0)		7 8 25.39	27 37	144.22	70.69
	α ² Geminorum -	3	7 24 16.22	32 14		
	κ Geminorum -	4	7 34 40.30	N.24 47		
14	α ² Geminorum -	3	7 24 16.25	N.32 14		
	κ Geminorum -	4	7 34 40.33	24 47		
	Moon II. l.c. - -		7 36 54.37	26 45	140.50	69.77
	Moon II. u.c. (17.0)		8 4 35.18	25 33	136.24	68.71
	φ ² Cancri - - -	6	8 16 59.02	27 28		
	δ Cancri - - -	4.5	8 35 28.80	N.18 45		
15	φ ² Cancri - - -	6	8 16 59.05	N.27 28		
	δ Cancri - - -	4.5	8 35 28.83	18 45		
	Moon II. l.c. - -		8 31 23.11	24 3	131.73	67.57
	Moon II. u.c. (18.1)		8 57 16.64	22 16	127.22	66.40
	q Cancri - - -	6	9 9 56.15	18 24		
	λ Leonis - - -	4.5	9 22 28.49	N.23 41		
16	q Cancri - - -	6	9 9 56	34		
	λ Leonis - - -	4.5	9 22			
	Moon II. l.c. - -		9 22			36
	Moon II. u.c. (19.1)		9 46			31
	α Leonis - - - *	1	9 56			
	γ Leonis - - -	2	10 11	40		
17	α Leonis - - - *	1	9 59			
	γ Leonis - - -	2	10 11			

450 MOON-CULMINATING STARS.

1837.	Name.	Mag- nitude.	At Greenwich Transit.			Var. of R.A. in 1 hour of Long.	Sd. (1/2 par.)
			Apparent Right Ascension in Time.	Declination.			
Dec. 17	Moon II. <i>l. c.</i>	- -	^h 10 ^m 9 ^s 55.51	N. 15 40		115.61	62
	Moon II. <i>u. c.</i>	(20.1)	10 32 45.36	13 8		112.80	62
	<i>l</i> Leonis - - - *	6	10 40 44.04	11 24			
	χ Leonis - - - *	4.5	10 56 39.32	N. 8 13			
18	<i>l</i> Leonis - - - *	6	10 40 44.08	N. 11 24			
	χ Leonis - - - *	4.5	10 56 39.36	8 13			
	Moon II. <i>l. c.</i>	- -	10 55 5.39	10 29		110.63	61.9
	Moon II. <i>u. c.</i>	(21.2)	11 17 3.73	7 44		109.19	61.9
	<i>v</i> Leonis - - - -	4.5	11 28 39.02	0 5			
	<i>v</i> Virginis - - - *	4.5	11 37 31.63	N. 7 27			
19	<i>v</i> Leonis - - - -	4.5	11 28 39.06	N. 0 5			
	<i>v</i> Virginis - - - *	4.5	11 37 31.67	7 27			
	Moon II. <i>l. c.</i>	- -	11 38 48.91	4 54		108.46	61.5
	Moon II. <i>u. c.</i>	(22.2)	12 0 29.88	2 1		108.49	61.5
	η Virginis - - - -	3.4	12 11 36.55	N. 0 14			
	γ^1 Virginis - - - -	4	12 33 26.46	S. 0 33			
20	η Virginis - - - -	3.4	12 11 36.58	N. 0 14			
	γ^1 Virginis - - - -	4	12 33 26.49	S. 0 33			
	Moon II. <i>l. c.</i>	- -	12 22 15.88	0 55		109.30	61.5
	Moon II. <i>u. c.</i>	(23.2)	12 44 16.44	3 51		110.93	61.5
	θ Virginis - - - -	4.5	13 1 33.44	4 40			
	α Virginis - - - -	1	13 16 39.05	S. 10 18			
21	θ Virginis - - - -	4.5	13 1 33.47	S. 4 40			
	α Virginis - - - -	1	13 16 39.09	10 18			
	Moon II. <i>l. c.</i>	- -	13 6 41.48	6 48		113.39	62
	Moon II. <i>u. c.</i>	(24.2)	13 29 41.15	9 43		116.70	63
	O Virginis - - - -	6	13 37 17.55	11 36			
	κ Virginis - - - -	4	14 4 14.67	S. 9 31			
22	O Virginis - - - -	6	13 37 17.59	S. 11 36			
	κ Virginis - - - -	4	14 4 14.70	9 31			
	Moon II. <i>l. c.</i>	- -	13 53 25.78	12 34		120.88	64
	Moon II. <i>u. c.</i>	(25.3)	14 18 5.75	15 20		125.92	66
	α^2 Libræ - - - -	3	14 41 54.38	15 22			
	20 Libræ - - - -	3.4	14 54 34.93	S. 24 38			
23	Moon II. <i>l. c.</i>	- -	14 43 50.86	S. 17 58		131.74	67
	Moon II. <i>u. c.</i>	(26.3)	15 10 50.01	20 25		138.23	69
24	Moon II. <i>l. c.</i>	- -	15 39 10.03	S. 22 39		145.17	70
	Moon II. <i>u. c.</i>	(27.3)	16 8 54.41	24 35		152.22	72
25	Moon II. <i>l. c.</i>	- -	16 40 1.97	S. 26 10		158.94	74
	Moon II. <i>u. c.</i>	(28.4)	17 12 25.44	27 20		164.78	75
26	Moon II. <i>l. c.</i>	- -	17 45 50.93	S. 28 3		169.18	76

MOON-CULMINATING STARS.

451

837.	Name.	Mag- nitude.	At Greenwich Transit.			
			Apparent Right Ascension in Time.	Declination.	Var. of ☿'s R. A. in 1 hour of Long.	Sid. Time of ☿'s Sem. pass. mer.
ec. 26	Moon II.	v. c. (29 '4)	^h 18 ^m 19 ^s 58 '15	S. 28 14	171 '67	77 '33
27	Moon I.	l. c. - -	18 51 47 '55	S. 27 53	172 '02	77 '42
28	Moon I.	v. c. (0 '9)	19 26 3 '47	S. 27 1	170 '29	77 '02
	Moon I.	l. c. - -	19 59 47 '20	25 37	166 '72	76 '18
29	Moon I.	v. c. (2 '0)	20 32 39 '50	S. 23 44	161 '81	75 '02
	Moon I.	l. c. - -	21 4 27 '64	21 27	156 '14	73 '68
30	Moon I.	v. c. (3 '0)	21 35 5 '87	S. 18 48	150 '25	72 '25
	Moon I.	l. c. - -	22 4 34 '32	15 53	144 '57	70 '86
31	♈ Aquarii - - -	4.5	21 57 39 '82	S. 14 39		
	♉ Aquarii - - -	4.5	22 8 15 '72	8 36		
	Moon I.	v. c. (4 '1)	22 32 57 '71	12 44	139 '44	69 '59
	Moon I.	l. c. - -	23 0 24 '11	9 26	135 '09	68 '48
	♊ Aquarii - - -	4	22 44 8 '74	8 27		
	♋ Aquarii - - -	5	23 10 31 '42	S. 10 30		

OCCULTATIONS OF PLANETS AND FIXED STARS BY THE MOON
VISIBLE AT GREENWICH.

Day of the Month.	Star's Name.	Magnitude.	Immersion.				Emergence.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle	
					N. Point.	Ver- tex.			N. Point.	Ver- tex.
Jan. 13	o Piscium - -	5	5 30	9 57	76	112	6 19	10 47	339	
16	A' Tauri - - -	5	0 35	4 51	73	33	1 28	5 45	339	
17	k Tauri - - -	6	1 34	5 46	85	43	2 42	6 54	315	
20	c Geminorum	6	5 3	9 3	81	43	6 24	10 24	267	
Feb. 1	(359) Sagittarii	5	15 26	18 37	77	54	16 36	19 47	265	
12	32 Tauri - - -	6	7 50	10 19	186	228	7 59	10 28	201	
13	k Tauri - - -	6	12 6	14 31	15	51	12 17	14 41	352	
16	c Geminorum	6	15 16†	17 28	167	201				
17	λ Cancri - - -	6	7 16†	9 26	346	328				
18	MARS - - -	-	8 46	10 51	37	31	9 55	12 0	275	
Mar. 15	47 Geminorum	6	8 9	8 36	52	74	9 21	9 48	286	
16	ω¹ Cancri - - -	6	5 56	6 20	73	40	7 20	7 43	266	
26	σ Scorpii - - -	4	15 36	15 18	22	17	16 28	16 10	296	
27	γ Ophiuchi - -	6	16 11	15 50	53	43	17 21	16 59	282	
30	(170) Capricorni	6	16 34†	16 0	175	143	16 50	16 17	204	
Apr. 10	c Tauri - - -	4.5	7 57	6 41	172	209	8 8	6 53	189	
12	c Geminorum	6	9 35†	8 12	344	18				
May 10	λ Cancri - - -	6	12 42	9 28	9	52	13 13	9 59	310	
15	η Virginis - -	3.4	18 1	14 26	343	22	18 13*	14 39	319	
June 5	47 Geminorum	6	14 22	9 26	159	195	14 32	9 35	180	
6	ω¹ Cancri - - -	6	12 53†	7 53	162	205				
19	(84) Sagittarii -	6	15 41†	9 49	115	85	16 42	10 50	247	
20	(170) Capricorni	6	17 1	11 5	128	99	18 1	12 5	254	
21	(243) Capricorni	6	21 48	15 47	127	129	22 58	16 57	291	
July 21	p Piscium - -	5	20 18†	12 20	211	179				
21	q Piscium - -	5	22 17†	14 19	215	198				
Aug. 13	(84) Sagittarii -	6	16 28	7 0	143	118	17 13	7 44	223	
14	(170) Capricorni	6	17 27	7 55	122	96	18 31	8 59	264	
15	(243) Capricorni	6	21 14	11 37	99	95	22 19	12 42	318	
18	10 Ceti - - -	6	19 46	9 58	128	92	20 47	10 58	296	
21	δ Arietis - - -	4	2 30	16 29	157	148	3 31	17 29	261	
22	32 Tauri - - -	6	21 50	11 45	70	29	22 31	12 27	337	
24	C Tauri - - -	4.5	1 32	15 20	141	96	2 26	16 13	244	
26	c Geminorum	6	3 17†	16 56	358	314				
Sept. 2	VENUS - - -	-	17 25†	6 38	150	187				
13	ψ¹ Aquarii - -	5.6	1 51	14 20	83	109	2 37	15 5	346	

OCULTATIONS OF PLANETS AND FIXED STARS BY THE MOON,
VISIBLE AT GREENWICH.

Day of the Month.	Star's Name.	Magnitude.	Immersion.				Emersion.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle from	
					N. Point.	Ver- tex.			N. Point.	Ver- tex.
			h m	h m	°	°	h m	h m	°	°
pt. 14	<i>p</i> Piscium - -	5	19 44	8 9	161	127	20 30	8 56	261	230
14	<i>q</i> Piscium - -	5	21 33	9 58	166	142	22 23	10 49	265	248
16	54 Ceti - - -	6	23 41	11 58	106	81	0 47	13 4	325	312
17	π Arietis - - -	5	3 10	15 23	59	68	3 48	16 0	359	16
ct. 8	<i>m</i> Capricorni -	6	0 8	10 58	61	90	0 43†	11 34	350	23
9	(243) Capricorni	6	19 32	6 20	134	115	20 41	7 28	277	268
12	10 Ceti - - -	6	20 26	7 1	108	75	21 27	8 2	320	292
15	δ Arietis - - -	4	0 15	10 38	145	110	1 17	11 40	275	249
15	65 Arietis - - -	6	7 26	17 48	80	121	8 22	18 44	312	353
18	C Tauri - - -	4.5	21 14†	7 25	189	159				
20	ω^1 Cancrī - - -	6	4 39	14 42	40	359	5 37	15 39	304	268
Nov. 4	(170) Capricorni	6	23 22	8 26	103	130	0 24†	9 28	304	337
5	35 Capricorni -	6	21 5	6 6	83	81	22 5	7 6	333	340
6	<i>f</i> Aquarii - - -	6	1 49	10 46	71	101	2 27	11 24	353	26
7	ψ^1 Aquarii - -	5.6	21 44	6 37	147	132	22 50	7 43	283	280
7	ψ^2 Aquarii - -	5	23 4†	7 57	37	36				
8	<i>q</i> Piscium - - -	5	19 18	4 7	193	157	19 35	4 25	227	192
10	54 Ceti - - -	6	23 0	7 41	110	80	0 5	8 46	320	299
11	π Arietis - - -	5	2 25	11 2	66	62	3 8	11 45	354	2
11	ρ^2 Arietis - - -	6	6 16	14 52	90	128	7 16	15 52	311	352
14	C Tauri - - -	4.5	9 34	17 57	81	126	10 39	19 2	271	316
16	<i>c</i> Geminorum	6	9 15†	17 30	344	14				
17	λ Cancrī - - -	6	23 54	8 8	45	14	0 35	8 48	304	269
22	<i>n</i> Virginis - -	6	6 27	14 20	349	310	6 45	14 38	314	276
22	η Virginis - -	3.4	6 30	14 22	62	23	7 33	15 25	237	200
Dec. 9	δ Arietis - - -	4	21 42†	4 30	206	163				
9	65 Arietis - - -	6	4 3	10 49	85	99	5 10	11 56	322	350
13	47 Geminorum	6	3 24	9 55	33	350	4 8	11 33	328	286
14	ω^1 Cancrī - - -	6	1 19†	7 45	177	137				
14	λ Cancrī - - -	6	11 58	18 23	75	118	12 27	241	284	

* Star setting.

† Star below the horizon.

‡ A near approach.

ELEMENTS

for facilitating the Computation of Occultations of certain Stars by the Moon

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of	At Greenwich Mean Time of ♄				Lim Para
			Apparent ♄ in R. A. of ♄ and ♀.	Apparent R. A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.		
			h m s	h m s	° ' "	♄	Lat	
Jan. 1	λ Virginis -	4	13 52 7	14 10 17.04	S. 12 36 56.7	S. 8 52	31 N.	
2	α ³ Libræ -	3	4 27 16	14 41 51.12	15 21 31.0	S. 45 48	4 S.	
3	δ Scorpii -	3	9 43 44	15 50 40.66	22 9 2.0	N. 6 32	36 N.	
3	g Ophiuchi	5	19 38 34	16 15 47.53	S. 23 3 51.6	S. 36 55	4 S.	
4	A Ophiuchi	4.5	14 14 57	17 5 18.01	S. 26 21 21.6	N. 17 26	38 N.	
8	ε Capricorni	5	13 3 3	21 27 55.21	20 11 42.8	N. 0 25	33 N.	
8	κ Capricorni	5	15 17 11	21 33 31.31	19 36 29.5	S. 6 55	27 N.	
10	ψ ³ Aquarii -	5	8 33 4	23 9 24.87	S. 10 4 25.9	N. 15 24	55 N.	
10	ψ ³ Aquarii -	5	9 2 8	23 10 27.88	S. 10 30 12.4	N. 48 44	79 N.	
11	p Piscium -	5	3 53 44	23 50 18.81	4 27 43.6	S. 15 51	29 N.	
11	q Piscium -	5	5 25 15	23 53 27.46	S. 3 56 11.3	23 10	23 N.	
12	c Piscium -	5	14 37 27	0 59 58.09	N. 4 47 7.6	S. 27 19	19 N.	
13	o Piscium -	5	9 25 43	1 36 47.10	N. 8 20 5.7	N. 37 9	87 N.	
14	π Arietis -	5	17 37 12	2 40 12.38	16 47 0.3	S. 43 22	2 N.	
15	δ Arietis -	4	4 37 47	3 2 19.05	19 6 25.2	S. 54 53	13 S.	
16	A ¹ Tauri -	5	6 15 27	3 55 4.29	N. 21 37 58.4	N. 47 53	90 N.	
17	k Tauri -	6	7 8 37	4 48 10.89	N. 24 47 38.2	N. 38 10	90 N.	
18	C Tauri -	4.5	8 8 33	5 43 5.85	27 34 7.1	S. 23 28	19 N.	
20	i Geminor.	4	1 47 12	7 15 36.88	28 6 59.8	64 18	37 S.	
20	v Geminor.	5	6 27 41	7 25 53.34	N. 27 15 11.7	S. 27 39	14 N.	
20	c Geminor.	6	10 14 58	7 34 10.76	N. 26 10 5.9	N. 23 7	71 N.	
20	φ Geminor.	5	14 32 37	7 43 32.01	27 10 57.4	S. 56 9	21 S.	
23	MARS -	-	1 1 39	9 44 45.28	18 14 1.6	N. 25 49	73 N.	
23	η Leonis -	3.4	8 2 34	9 58 27.33	N. 17 33 16.2	S. 9 34	34 N.	
25	ν Virginis -	4.5	12 54 27	11 37 29.43	N. 7 26 31.7	S. 74 24	41 S.	
26	γ ¹ Virginis -	4	19 23 29	12 33 24.37	S. 0 33 18.0	30 14	16 N.	
27	θ Virginis -	4.5	10 27 26	13 1 31.29	4 40 2.3	2 58	40 N.	
28	λ Virginis -	4	21 35 0	14 10 17.95	S. 12 37 1.9	S. 26 49	15 N.	
29	α ³ Libræ -	3	12 37 50	14 41 52.03	S. 15 21 35.6	S. 62 58	24 S.	
30	δ Scorpii -	3	18 54 57	15 50 41.56	22 9 5.1	8 4	23 N.	
31	g Ophiuchi	5	5 10 33	16 15 48.43	23 3 54.1	S. 50 22	18 S.	
Feb. 1	A Ophiuchi	4.5	0 24 6	17 5 18.85	S. 26 21 22.8	N. 6 23	28 N.	
1	3 Sagittarii	5	12 16 4	17 37 16.81	S. 27 45 40.5	N. 35 27	53 N.	
1	(359) Sagitt.	5	19 42 6	17 57 44.21	28 28 2.5	N. 57 2	62 N.	
2	φ Sagittarii	4.5	9 11 54	18 35 26.81	27 9 6.2	S. 30 34	11 S.	
2	σ Sagittarii	3	12 38 24	18 45 7.86	S. 26 29 32.9	S. 66 9	45 S.	

ELEMENTS

for facilitating the Computation of Occultations of certain Stars by the Moon.

Day the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R. A. of ♄ and ♀.	At Greenwich Mean Time of ♄			Limiting Parallels.
				Apparent R. A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.	
			h m s	h m s	° ' "	♄	Latitude.
b. 2	♄ Sagittarii	4	16 45 35	18 56 44.13	S. 27 54 8.3	N. 26 31	42 N. 19 S.
6	♄ Aquarii	-5	19 6 48	23 9 24.75	10 4 26.2	27 33	67 N. 20 S.
6	♄ Aquarii	-5	19 35 5	23 10 27.76	10 30 12.7	N. 60 57	80 N. 12 N.
7	♄ Piscium	-5	13 53 43	23 50 18.62	S. 4 27 44.5	S. 1 9	42 N. 45 S.
7	♄ Piscium	-5	15 22 23	23 53 27.26	S. 3 56 12.3	S. 8 17	36 N. 51 S.
8	♄ Piscium	-5	23 29 44	0 59 57.79	N. 4 47 6.0	S. 9 40	35 N. 52 S.
9	♄ Piscium	-5	17 41 56	1 36 46.77	8 20 4.2	N. 55 29	90 N. 10 N.
11	♄ Arietis	-5	0 59 44	2 40 12.00	N. 16 46 59.0	S. 25 17	20 N. 61 S.
11	♄ Arietis	-4	11 45 19	3 2 18.69	N. 19 6 24.2	S. 37 13	8 N. 70 S.
12	32 Tauri	-6	9 14 31	3 47 14.17	22 0 19.9	N. 8 55	53 N. 22 S.
12	♄ Tauri	-5	12 55 55	3 55 3.95	21 37 58.0	64 5	90 N. 37 N.
13	♄ Tauri	-6	13 33 19	4 48 10.59	N. 24 47 38.5	N. 52 26	90 N. 28 N.
14	♄ Tauri	-4.5	14 26 16	5 43 5.64	N. 27 34 8.1	S. 11 28	32 N. 29 S.
16	♄ Geminor.	4	8 5 16	7 15 36.86	28 7 1.3	56 40	22 S. 62 S.
16	♄ Geminor.	5	12 46 10	7 25 53.35	27 15 13.0	S. 20 32	22 N. 41 S.
16	♄ Geminor.	6	16 33 48	7 34 10.79	N. 26 10 7.2	N. 29 48	82 N. 7 N.
16	♄ Geminor.	5	20 51 49	7 43 32.07	N. 27 10 58.8	S. 49 59	11 S. 63 S.
17	♄ Cancri	-6	9 33 31	8 10 50.90	24 31 51.9	N. 40 10	90 N. 14 N.
18	MARS	-	11 14 43	9 4 29.77	21 21 29.8	N. 35 8	90 N. 3 N.
19	♄ Leonis	-3.4	14 17 31	9 58 27.71	N. 17 33 15.5	S. 11 54	32 N. 47 S.
23	♄ Virginis	-4	1 8 53	12 33 25.16	S. 0 33 22.2	S. 43 14	3 N. 90 S.
23	♄ Virginis	-4.5	16 10 38	13 1 32.01	4 40 6.8	17 18	27 N. 61 S.
25	♄ Virginis	-4	3 26 12	14 10 18.80	12 37 6.6	43 5	0 90 S.
27	♄ Scorpii	-3	1 32 4	15 50 42.51	S. 22 9 8.5	S. 24 5	9 N. 70 S.
27	♄ Ophiuchi	5	12 3 50	16 15 49.36	S. 23 3 56.9	S. 65 57	37 S. 90 S.
28	♄ Ophiuchi	-4.5	7 52 29	17 5 19.78	26 21 24.3	S. 8 2	15 N. 52 S.
28	♄ Sagittarii	5	20 8 31	17 37 17.71	27 45 41.2	N. 21 58	89 N. 23 S.
far. 1	(359) Sagitt.	5	3 50 15	17 57 45.13	S. 28 28 2.7	N. 44 11	62 N. 1 S.
1	♄ Sagittarii	-4.5	17 49 6	18 35 27.65	28 8 8	21 S.	90 S.
2	♄ Sagittarii	-4	1 39 3	18 56 44.9	28 45 45	31 N.	29 S.
4	♄ Capricorni	5	10 59 22	21 27 55.7	28 53 53	35 N.	42 S.
4	♄ Capricorni	5	13 14 48	21 33 31.7	28 42 42	30 N.	48 S.
8	♄ Piscium	-5	9 54 42	0 59 57.79	11 45 N.	42 S.	
9	♄ Piscium	-5	3 41 48	1 36 46.77	27 06 N.	24 N.	
10	♄ Arietis	-5	10 9 48	2 40 12.00	27 47 S.	47 S.	
10	♄ Arietis	-4	20 37 54	3 2 18.69	27 6 S.	6 S.	

ELEMENTS

for facilitating the Computation of Occultations of certain Stars by the Mo

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R. A. of ♄ and ♀.	At Greenwich Mean Time of ♄			Lim Par
				Apparent R. A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.	
			^h ^m ^s	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°]
Mar. 13	C Tauri -	4.5	21 46 57	5 43 51.19	N. 27 34 8.6	N. 1 34	45 N.
15	47 Geminor.	6	8 39 42	7 1 16.52	27 7 11.8	N. 31 35	86 N.
15	ε Geminor.	4	15 8 21	7 15 36.52	28 7 2.9	S. 45 44	6 S.
15	ν Geminor.	5	19 48 36	7 25 53.03	N. 27 15 14.6	S. 9 54	33 N.
16	φ Geminor.	5	3 53 37	7 43 31.77	N. 27 11 0.5	S. 39 51	2 N.
16	ω ¹ Cancrī -	6	7 22 22	7 51 3.95	25 50 5.6	N. 23 51	73 N.
18	η Leonis -	3.4	21 22 16	9 58 27.73	17 33 16.4	S. 7 7	37 N.
21	η Virginis -	3.4	20 0 39	12 11 35.37	N. 0 14 15.4	N. 79 18	90 N.
22	γ ¹ Virginis -	4	7 40 32	12 33 25.45	S. 0 33 24.2	S. 47 10	0
22	θ Virginis -	4.5	22 30 21	13 1 32.47	4 40 9.5	22 41	23 N.
24	λ Virginis -	4	9 17 0	14 10 19.42	12 37 10.0	51 11	8 S.
26	δ Scorpī -	3	7 0 21	15 50 43.33	S. 22 9 11.3	S. 34 4	0
26	σ Scorpī -	4	15 39 25	16 11 18.42	S. 25 11 45.2	N. 67 52	65 N.
26	g Ophiuchi	5	17 31 55	16 15 50.21	23 3 59.3	S. 76 5	60 S.
27	Λ Ophiuchi	4.5	13 26 47	17 5 20.69	26 21 25.8	S. 18 12	6 N.
27	y Ophiuchi	6	16 29 25	17 13 7.05	S. 27 58 39.4	N. 63 17	62 N.
28	3 Sagittarii	5	1 51 17	17 37 18.68	S. 27 45 42.0	N. 11 54	29 N.
28	(359) Sagitt.	5	9 40 6	17 57 46.07	28 28 2.9	N. 34 15	51 N.
28	φ Sagittarii	4.5	23 55 16	18 35 28.54	27 9 5.0	S. 51 45	31 S.
29	τ Sagittarii	4	7 56 13	18 56 45.84	S. 27 54 6.0	N. 6 22	23 N.
30	(170) Capric.	6	16 57 17	20 23 8.91	S. 25 29 19.9	N. 42 12	64 N.
31	ε Capricorni	5	19 2 16	21 27 56.31	20 11 36.2	S. 4 31	29 N.
31	κ Capricorni	5	21 22 10	21 33 32.36	19 36 23.0	S. 10 56	24 N.
Apr. 2	ψ ² Aquarii -	5	15 26 45	23 9 25.15	S. 10 4 22.4	N. 28 35	69 N.
2	ψ ³ Aquarii -	5	15 55 42	23 10 28.15	S. 10 30 8.7	N. 62 6	79 N.
6	π Arietis -	5	19 57 5	2 40 11.43	N. 16 46 56.6	S. 5 47	38 N.
7	δ Arietis -	4	6 16 11	3 2 18.04	19 6 21.6	S. 17 2	28 N.
10	C Tauri -	4.5	6 8 30	5 43 4.70	N. 27 34 8.3	N. 8 31	53 N.
11	ε Geminor.	4	23 2 9	7 15 36.05	N. 28 7 3.8	S. 39 6	2 N.
12	ν Geminor.	5	3 40 40	7 25 52.55	27 15 15.7	S. 3 20	40 N.
12	c Geminor.	6	7 26 44	7 34 10.02	26 10 9.8	N. 46 43	90 N.
12	φ Geminor.	5	11 43 22	7 43 31.32	N. 27 11 1.8	S. 33 25	9 N.
15	η Leonis -	3.4	5 18 15	9 58 27.49	N. 17 33 18.2	S. 2 23	42 N.
18	γ ¹ Virginis -	4	15 40 29	12 33 25.57	S. 0 33 24.5	46 0	1 N.
19	θ Virginis -	4.5	6 22 32	13 1 32.68	4 40 10.4	22 10	23 N.
20	λ Virginis -	4	16 38 57	14 10 19.80	S. 12 37 11.8	S. 52 1	8 S.

ELEMENTS

for facilitating the Computation of Occultations of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	At Greenwich Mean Time of ϕ				Limiting Parallels.
			Greenwich Mean Time of Apparent ϕ in R. A. of ζ and \ast .	Apparent R. A. of ζ and \ast .	Apparent Declination of \ast .	Diff. of Apparent Dec. of ζ and \ast .	
			h m s	h m s	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	Latitude.
Apr. 22	δ Scorpii -	3	13 26 31	15 50 43.98	S. 22 9 13.4	S. 36 3	1 S. 87 S.
22	σ Scorpii -	4	21 54 50	16 11 19.14	25 11 47.3	N. 65 45	65 N. 25 N.
23	A Ophiuchi	4.5	19 17 36	17 5 21.51	26 21 27.0	S. 20 33	4 N. 66 S.
24	3 Sagittarii	5	7 30 37	17 37 19.55	S. 27 45 42.5	N. 9 29	27 N. 35 S.
24	(359) Sagitt.	5	15 13 29	17 57 46.97	S. 28 28 3.1	N. 31 48	48 N. 13 S.
25	ϕ Sagittarii	4.5	5 20 50	18 35 29.49	27 9 4.2	S. 54 13	34 S. 90 S.
25	τ Sagittarii	4	13 19 16	18 56 46.77	27 54 4.7	N. 3 54	21 N. 40 S.
28	ϵ Capricorni	5	0 53 7	21 27 57.12	S. 20 11 31.9	S. 6 33	28 N. 50 S.
28	κ Capricorni	5	3 15 41	21 33 33.17	S. 19 36 18.6	S. 12 55	23 N. 56 S.
29	ψ^2 Aquarii -	5	22 20 32	23 9 25.73	10 4 18.1	N. 27 14	68 N. 20 S.
29	ψ^3 Aquarii -	5	22 50 16	23 10 28.73	10 30 4.4	60 45	79 N. 12 N.
30	p Piscium -	5	17 56 32	23 50 19.29	S. 4 27 38.6	N. 3 36	47 N. 41 S.
30	q Piscium -	5	19 28 15	23 53 27.92	S. 3 56 6.6	S. 3 9	41 N. 47 S.
May 2	e Piscium -	5	4 10 10	0 59 57.98	N. 4 47 8.0	N. 2 53	47 N. 41 S.
5	MERCURY -		23 40 17	4 13 53.18	23 41 33.1	33 4	85 N. 2 N.
7	C Tauri -	4.5	14 40 7	5 43 4.43	N. 27 34 7.4	N. 7 47	52 N. 11 S.
9	ι Geminor.	4	7 13 27	7 15 35.65	N. 28 7 3.8	S. 40 19	1 N. 62 S.
9	ν Geminor.	5	11 50 18	7 25 52.16	27 15 15.8	4 36	39 N. 25 S.
9	ϕ Geminor.	5	19 50 35	7 43 30.92	27 11 2.2	S. 34 47	8 N. 59 S.
10	λ Cancri -	6	8 27 52	8 10 49.84	N. 24 31 55.7	N. 54 5	90 N. 29 N.
12	η Leonis -	3.4	13 32 53	9 58 27.16	N. 17 33 20.0	S. 4 28	39 N. 40 S.
15	η Virginis -	3.4	13 1 12	12 11 35.34	N. 0 14 16.0	N. 79 7	90 N. 50 N.
16	γ^1 Virginis -	4	0 42 24	12 33 25.50	S. 0 33 23.6	S. 47 42	0 90 S.
16	θ Virginis -	4.5	15 28 39	13 1 32.67	S. 4 40 10.0	S. 23 33	22 N. 68 S.
18	λ Virginis -	4	1 41 18	14 10 19.97	S. 12 37 12.4	S. 52 24	8 S. 90 S.
19	δ Scorpii -	3	21 51 38	15 50 44.43	22 9 14.8	S. 34 46	0 84 S.
20	σ Scorpii -	4	6 9 14	16 11 19.67	25 11 49.0	N. 67 22	65 N. 27 N.
20	g Ophiuchi	5	7 57 0	16 15 51.46	S. 23 4 2.4	S. 76 31	56 S. 90 S.
21	A Ophiuchi	4.5	3 1 17	17 5 22.11		3 5	7 N. 63 S.
21	3 Sagittarii	5	14 55 15	17 37 20		2 24	30 N. 32 S.
21	(359) Sagitt.	5	22 25 54	17 57 4		3 0	51 N. 10 S.
22	ϕ Sagittarii	4.5	12 11 0	18 35 3		31	29 S. 90 S.
22	τ Sagittarii	4	19 57 17	18 56 47.6		3	24 N. 36 S.
25	ϵ Capricorni	5	6 25 57	21			32 N. 45 S.
25	κ Capricorni	5	8 47 16	21			28 N. 51 S.
27	ψ^2 Aquarii -	5	3 50 48	23			

ELEMENTS

for facilitating the Computation of Occultations of certain Stars by the Moon

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R. A. of ♄ and ♎.		At Greenwich Mean Time of ♄			Lim Pan
			♄	♎	Apparent R. A. of ♄ and ♎.	Apparent Declination of ♎.	Diff. of Apparent Dec. of ♄ and ♎.	
			h m s	h m s	° ' "	♄	♎	Lat
May 27	♄ Aquarii -	5	4 20 45	23 10 29.55	S. 10 29 58.8	N. 66 32	80 N.	
27	p Piscium -	5	23 38 20	23 50 20.03	4 27 33.5	9 2	52 N.	
28	q Piscium -	5	1 11 13	23 53 28.68	S. 3 56 1.3	2 15	46 N.	
29	e Piscium -	5	10 24 0	0 59 58.62	N. 4 47 12.1	N. 7 3	50 N.	
30	o Piscium -	5	4 49 35	1 36 47.29	N. 8 20 8.2	N. 74 25	90 N.	
31	π Arietis -	5	11 52 6	2 40 12.01	16 46 58.4	S. 4 38	39 N.	
31	δ Arietis -	4	22 23 0	3 2 18.51	19 6 22.5	S. 16 33	28 N.	
June 5	47 Geminor.	6	8 32 57	7 1 15.56	N. 27 7 11.8	N. 31 28	86 N.	
5	ε Geminor.	4	14 55 22	7 15 35.51	N. 28 7 3.1	S. 46 22	6 S.	
5	v Geminor.	5	19 31 42	7 25 52.00	27 15 15.3	10 54	32 N.	
6	φ Geminor.	5	3 31 10	7 43 30.73	27 11 1.7	S. 41 31	0	
6	ω ¹ Cancrī -	6	6 58 2	7 51 2.91	N. 25 50 7.2	N. 21 55	70 N.	
8	η Leonis -	3.4	21 22 4	9 58 26.87	N. 17 33 21.2	S. 14 6	30 N.	
11	η Virginis -	3.4	21 48 14	12 11 35.13	N. 0 14 17.5	N. 69 9	90 N.	
12	γ ¹ Virginis -	4	9 41 49	12 33 25.32	S. 0 33 22.2	S. 57 18	11 S.	
13	θ Virginis -	4.5	0 43 24	13 1 32.52	S. 4 40 8.8	S. 32 28	14 N.	
14	λ Virginis -	4	11 25 19	14 10 19.95	S. 12 37 12.1	S. 58 56	16 S.	
16	δ Scorpī -	3	7 46 25	15 50 44.65	22 9 15.6	S. 37 4	2 S.	
16	σ Scorpī -	4	16 1 32	16 11 19.94	25 11 50.1	N. 65 56	65 N.	
16	g Ophiuchi	5	17 48 33	16 15 51.74	S. 23 4 3.2	S. 77 47	60 S.	
17	A Ophiuchi	4.5	12 40 40	17 5 22.60	S. 26 21 28.9	S. 17 21	7 N.	
18	3 Sagittarii	5	0 23 11	17 37 20.81	27 45 44.0	N. 14 23	31 N.	
18	(359) Sagitt.	5	7 45 11	17 57 48.33	28 28 4.0	N. 37 47	54 N.	
18	φ Sagittarii	4.5	21 11 59	18 35 30.97	S. 27 9 3.5	S. 46 19	25 S.	
19	τ Sagittarii	4	4 46 42	18 56 48.37	S. 27 54 3.4	N. 12 52	29 N.	
19	(84) Sagitt.	6	11 3 30	19 14 22.61	28 10 26.0	50 16	62 N.	
20	(170) Capric.	6	12 15 35	20 23 11.60	25 29 11.3	53 2	65 N.	
21	ε Capricorni	5	13 35 32	21 27 58.91	S. 20 11 23.7	N. 9 23	41 N.	
21	κ Capricorni	5	15 52 53	21 33 34.95	S. 19 36 10.2	N. 3 14	37 N.	
21	(243) Capric.	6	16 6 13	21 34 7.40	20 21 31.0	51 25	70 N.	
23	ψ ² Aquarii -	5	9 55 12	23 9 27.44	10 4 7.1	45 42	75 N.	
23	ψ ³ Aquarii -	5	10 24 36	23 10 30.44	S. 10 29 53.3	N. 79 14	80 N.	
24	p Piscium -	5	5 24 28	23 50 20.93	S. 4 27 27.6	N. 21 56	64 N.	
24	q Piscium -	5	6 56 12	23 53 29.54	S. 3 55 55.6	15 8	58 N.	
25	e Piscium -	5	15 55 55	0 59 59.44	N. 4 47 17.4	19 0	62 N.	
27	π Arietis -	5	17 37 10	2 40 12.75	N. 16 47 1.7	N. 3 39	47 N.	

ELEMENTS

for facilitating the Computation of Occultations of certain Stars by the Moon.

Day the Month.	Star's Name.	Magnitude.	At Greenwich Mean Time of δ				Limiting Parallels.
			Greenwich Mean Time of Apparent δ in R. A. of ☾ and *.	Apparent R. A. of ☾ and *.	Apparent Declination of *.	Diff. of Apparent Dec. of ☾ and *.	
			h m s	h m s	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	Latitude.
28	δ Arietis -	4	4 14 3	3 2 19.25	N. 19 6 25.3	S. 9 17	35 N. 43 S.
28	ζ Arietis -	5	5 46 9	3 5 32.84	20 26 14.3	71 42	39 S. 70 S.
y 6	η Leonis -	3.4	4 18 27	9 58 26.71	17 33 21.6	S. 26 8	18 N. 63 S.
9	η Virginis -	3.4	5 30 58	12 11 34.88	N. 0 14 19.1	N. 53 18	90 N. 8 N.
9	γ^1 Virginis -	4	17 37 58	12 33 25.08	S. 0 33 20.6	S. 73 12	36 S. 90 S.
10	θ Virginis -	4.5	8 58 27	13 1 32.29	4 40 7.4	48 9	2 S. 90 S.
11	λ Virginis -	4	20 29 1	14 10 19.76	12 37 11.2	72 51	37 S. 90 S.
13	δ Scorpii -	3	17 47 17	15 50 44.61	S. 22 9 15.9	S. 46 29	12 S. 90 S.
14	σ Scorpii -	4	2 10 29	16 11 19.94	S. 25 11 50.9	N. 57 33	65 N. 13 N.
14	A Ophiuchi	4.5	23 4 16	17 5 22.72	26 21 29.8	S. 22 58	2 N. 68 S.
15	3 Sagittarii	5	10 51 3	17 37 21.00	27 45 45.0	N. 10 25	27 N. 34 S.
15	(359) Sagitt.	5	18 14 6	17 57 48.58	S. 28 28 5.1	N. 34 52	50 N. 11 S.
16	ϕ Sagittarii	4.5	7 39 25	18 35 31.33	S. 27 9 4.1	S. 47 16	25 S. 90 S.
16	τ Sagittarii	4	15 11 20	18 56 48.77	27 54 3.9	N. 13 4	29 N. 32 S.
18	ϵ Capricorni	5	22 58 54	21 27 59.62	20 11 21.3	18 9	49 N. 28 S.
19	κ Capricorni	5	1 12 35	21 33 35.69	S. 19 36 7.6	N. 12 19	45 N. 33 S.
20	ψ^2 Aquarii -	5	17 59 50	23 9 28.25	S. 10 4 2.5	N. 59 53	80 N. 10 N.
21	p Piscium -	5	12 53 36	23 50 21.76	4 27 22.3	37 37	83 N. 12 S.
21	q Piscium -	5	14 22 39	23 53 30.38	S. 3 55 50.4	30 55	74 N. 17 S.
22	e Piscium -	5	22 30 2	1 0 0.31	N. 4 47 22.9	N. 35 43	82 N. 12 S.
24	π Arietis -	5	23 23 9	2 40 13.62	N. 16 47 5.9	N. 18 25	63 N. 20 S.
25	δ Arietis -	4	9 55 10	3 2 20.12	19 6 29.1	N. 4 41	48 N. 30 S.
25	ζ Arietis -	5	11 26 44	3 5 33.72	20 26 17.9	S. 57 52	15 S. 70 S.
28	C Tauri -	4.5	10 43 3	5 43 5.55	N. 27 34 6.2	N. 10 27	55 N. 8 S.
30	ι Geminor.	4	3 39 35	7 15 36.13	N. 28 7 0.8	S. 48 53	10 S. 62 S.
30	ν Geminor.	5	8 18 1	7 25 52.56	27 15 13.1	S. 14 28	29 N. 35 S.
Aug. 5	η Virginis -	3.4	11 56 48	12 11 34.67	N. 0 14 20.3	N. 38 7	90 N. 8 S.
6	θ Virginis -	4.5	15 43 54	13 1 32.03	S. 4 40 6.0	S. 64 41	22 S. 90 S.
10	δ Scorpii -	3	2 27 22	15 50 44.33	S.	60 45	28 S. 90 S.
10	σ Scorpii -	4	11 5 18	16 11 19.68			65 N. 1 S.
10	α Scorpii -	1	14 25 29	16 19 27.62			24 N. 32 N.
11	A Ophiuchi	4.5	8 35 4	17 5 22.5			6 S. 86 S.
11	3 Sagittarii	5	20 40 40	17 37 20.5			18 N. 44 S.
12	(359) Sagitt.	5	4 14 38	17 57 48.58			20 S.
12	ϕ Sagittarii	4.5	17 57 37	18 35 31.33			
13	τ Sagittarii	4	1 37 56	18 56 48.77			

ELEMENTS

for facilitating the Computation of Occultations of certain Stars by the Me

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R. A. of ♄ and ♀.	At Greenwich Mean Time of ♄			Li Pa
				Apparent R. A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.	
			h m s	h m s	° ' "	° ' "	L
Aug. 13	(84) Sagitt.	6	7 57 26	19 14 23.16	S. 28 10 27.8	N. 45 53	62N
14	(170) Capric.	6	9 1 42	20 23 12.47	25 29 11.1	56 16	65N
15	ε Capricorni	5	9 45 1	21 28 0.04	20 11 20.6	20 29	51N
15	κ Capricorni	5	11 57 46	21 33 36.10	S. 19 36 6.8	N. 15 2	47N
15	(243) Capric.	6	12 10 38	21 34 8.56	S. 20 21 27.8	N. 63 18	70N
17	ψ ² Aquarii -	5	4 6 32	23 9 28.87	10 3 59.5	69 9	80N
17	p Piscium -	5	22 31 20	23 50 22.42	4 27 18.5	49 24	68N
17	q Piscium -	5	23 57 54	23 53 31.04	S. 3 55 46.5	N. 42 53	86N
18	10 Ceti - -	6	11 27 12	0 18 18.26	S. 0 56 49.8	N. 62 34	89N
19	e Piscium -	5	7 7 11	1 0 1.09	N. 4 47 27.8	50 34	90N
21	π Arietis -	5	6 34 6	2 40 14.52	16 47 10.5	34 16	83N
21	δ Arietis -	4	16 50 35	3 2 21.00	N. 19 6 33.1	N. 20 18	65N
21	ζ Arietis -	5	18 20 2	3 5 34.61	N. 20 26 22.0	S. 42 17	4N
22	d Pleiadum	5	8 35 6	3 36 41.54	23 26 17.4	70 27	37S
22	η Tauri - -	3	9 6 16	3 37 50.16	23 35 56.1	75 1	54S
22	f Pleiadum	5	9 51 54	3 39 30.68	N. 23 33 9.2	S. 64 53	26S
22	32 Tauri - -	6	13 22 41	3 47 16.07	N. 22 0 25.2	N. 60 56	90N
24	β Tauri - -	2	4 46 49	5 16 1.04	28 27 54.9	S. 67 30	41S
24	C Tauri - -	4.5	16 38 17	5 43 6.39	27 34 6.7	N. 21 52	70N
26	ι Geminor.	4	9 31 51	7 15 36.80	N. 28 6 59.4	S. 40 55	0
26	υ Geminor.	5	14 10 42	7 25 53.21	N. 27 15 11.6	S. 6 55	37N
26	c Geminor.	6	17 57 8	7 34 10.59	26 10 6.4	N. 41 41	90N
26	φ Geminor.	5	22 14 19	7 43 31.79	27 10 57.7	S. 40 4	2N
Sept. 1	η Virginis -	3.4	17 44 55	12 11 34.56	N. 0 14 20.8	N. 29 36	77N
2	VENUS - -	-	5 41 20	12 32 55.04	S. 2 46 19.7	N. 38 17	87N
2	θ Virginis -	4.5	21 30 19	13 1 31.82	4 40 5.1	S. 75 30	42S
3	MARS - -	-	16 11 49	13 36 13.27	10 10 0.4	9 44	33N
6	δ Scorpii -	3	9 8 40	15 50 43.92	S. 22 9 14.9	S. 73 42	52S
6	σ Scorpii -	4	17 59 9	16 11 19.26	S. 25 11 50.6	N. 31 16	57N
6	α Scorpii -	1	21 24 31	16 19 27.21	26 4 1.5	N. 56 4	64N
7	A Ophiuchi	4.5	16 5 8	17 5 22.14	26 21 30.7	S. 46 20	20S
8	3 Sagittarii	5	4 33 36	17 37 20.49	S. 27 45 46.6	S. 10 59	8N
8	(359) Sagitt.	5	12 22 29	17 57 48.13	S. 28 28 7.1	N. 14 48	29N
9	φ Sagittarii	4.5	2 33 7	18 35 31.02	27 9 6.3	S. 64 42	45S
9	τ Sagittarii	4	10 28 57	18 56 48.54	27 54 6.5	S. 2 47	16N
11	ε Capricorni	5	20 11 26	21 28 0.10	S. 20 11 21.4	N. 16 38	48N

ELEMENTS

for facilitating the Computation of Occultations of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R. A. of ♄ and ♀.	At Greenwich Mean Time of ♄			Limiting Parallels.
				Apparent R. A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.	
			h m s	h m s	° ' "	♄	Latitude.
pt. 11	♄ Capricorni	5	22 26 46	21 33 36.17	S. 19 36 7.6	N. 11 27	44 N. 34 S.
13	♄ Aquarii	5.6	14 3 57	23 7 23.95	9 58 10.6	49 19	67 N. 2 S.
13	♄ Aquarii	5	14 59 12	23 9 29.16	10 3 58.5	70 51	80 N. 21 N.
14	p Piscium	5	9 19 34	23 50 22.82	S. 4 27 16.4	N. 53 28	86 N. 2 N.
14	q Piscium	5	10 45 23	23 53 31.45	S. 3 55 44.3	N. 47 8	78 N. 4 S.
15	e Piscium	5	17 26 17	1 0 1.63	N. 4 47 31.1	58 9	90 N. 8 N.
16	54 Ceti	6	13 2 55	1 42 15.43	10 14 20.1	52 1	90 N. 5 N.
17	♄ Arietis	5	15 39 29	2 40 15.26	N. 16 47 14.2	N. 44 41	90 N. 3 N.
18	♄ Arietis	4	1 38 11	3 2 21.81	N. 19 6 36.9	N. 30 58	79 N. 7 S.
18	♄ Arietis	5	3 5 3	3 5 35.43	20 26 25.7	S. 31 35	15 N. 63 S.
18	b Pleiadum	4.5	16 17 15	3 35 15.02	23 35 57.8	75 43	51 S. 66 S.
18	d Pleiadum	5	16 55 51	3 36 42.38	N. 23 26 20.7	S. 59 36	17 S. 67 S.
18	η Tauri	3	17 26 10	3 37 51.01	N. 23 35 59.4	S. 64 10	24 S. 66 S.
18	f Pleiadum	5	18 10 32	3 39 31.52	23 33 12.4	54 1	10 S. 66 S.
20	β Tauri	2	12 3 40	5 16 1.98	28 27 56.1	S. 57 6	19 S. 62 S.
20	C Tauri	4.5	23 42 20	5 43 7.31	N. 27 34 7.3	N. 31 58	86 N. 12 N.
22	ε Geminor.	4	16 8 18	7 15 37.63	N. 28 6 57.8	S. 32 12	11 N. 54 S.
22	ν Geminor.	5	20 45 31	7 25 54.01	27 15 9.9	N. 1 36	46 N. 20 S.
23	φ Geminor.	5	4 46 53	7 43 32.60	27 10 55.5	S. 31 55	11 N. 56 S.
25	η Leonis	3.4	22 58 20	9 58 27.38	N. 17 33 16.6	S. 29 55	15 N. 67 S.
Oct. 3	σ Scorpii	4	23 30 6	16 11 18.85	S. 25 11 49.4	N. 25 1	50 N. 20 S.
4	α Scorpii	1	2 56 34	16 19 26.78	26 4 0.3	N. 49 47	64 N. 6 N.
4	A Ophiuchi	4.5	21 47 40	17 5 21.68	26 21 30.1	S. 52 41	27 S. 90 S.
5	3 Sagittarii	5	10 27 26	17 37 20.01	S. 27 45 46.4	S. 17 17	3 N. 63 S.
5	(359) Sagitt.	5	18 25 12	17 57 47.65	S. 28 28 7.2	N. 8 33	24 N. 36 S.
6	φ Sagittarii	4.5	8 55 14	18 35 30.55	27 9 6.9	S. 70 47	55 S. 90 S.
6	τ Sagittarii	4	17 3 40	18 56 48.08	27 54 7.4	S. 8 44	10 N. 53 S.
8	m Capricorni	6	10 32 3	20 45 24.21	24 21 37	N. 55 18	66 N. 9 N.
9	ε Capricorni	5	4 40 3			N. 12 23	45 N. 33 S.
9	κ Capricorni	5	7 1			7 17	41 N. 38 S.
9	(243) Capric.	6	7 14 3			55 36	70 N. 7 N.
11	♄ Aquarii	5	0 48 6			N. 68 49	80 N. 20 N.
11	p Piscium	5	19 31			0	86 N. 1 N.
11	q Piscium	5	20 21				N. 5 S.
12	10 Ceti	6	8				18 N.
13	e Piscium	5	3				9 N.

ELEMENTS

for facilitating the Computation of Occultations of certain Stars by the

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R. A. of ♄ and ♀.	At Greenwich Mean Time of ♄		
				Apparent R. A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.
			h m s	h m s	° ' "	♄
Oct. 15	π Arietis -	5	1 51 56	2 40 15.83	N. 16 47 17.0	N. 47 11
15	δ Arietis -	4	11 40 37	3 2 22.41	19 6 39.6	N. 33 41
15	ξ Arietis -	5	13 5 54	3 5 36.05	20 26 28.6	S. 28 51
15	65 Arietis -	6	17 15 45	3 15 5.35	N. 20 13 35.6	N. 33 15
16	b Pleiadum	4.5	2 2 32	3 35 15.74	N. 23 36 0.6	S. 72 46
16	d Pleiadum -	5	2 40 20	3 36 43.11	23 26 23.5	56 38
16	η Tauri -	3	3 10 1	3 37 51.74	23 36 2.2	61 12
16	f Pleiadum	5	3 53 27	3 39 32.25	N. 23 33 15.2	S. 51 2
17	β Tauri -	2	20 50 3	5 16 2.87	N. 28 27 57.2	S. 53 55
18	γ Tauri -	4.5	8 13 37	5 43 8.25	27 34 7.7	N. 35 8
18	κ Aurigæ -	4	17 28 50	6 5 2.66	29 33 11.3	S. 70 12
19	ι Geminor.	4	23 57 22	7 15 38.60	N. 28 6 56.0	S. 29 19
20	ν Geminor.	5	4 31 5	7 25 54.97	N. 27 15 7.8	N. 4 27
20	φ Geminor.	5	12 27 6	7 43 33.50	27 10 53.0	S. 29 9
20	ω ¹ Cancrī -	6	15 52 52	7 51 5.58	25 49 58.8	N. 32 57
23	η Leonis -	3.4	6 25 15	9 58 28.08	N. 17 33 12.2	S. 28 6
26	η Virginis -	3.4	7 31 26	12 11 35.01	N. 0 14 17.4	N. 29 21
27	θ Virginis -	4.5	10 52 14	13 1 32.03	S. 4 40 7.0	S. 77 51
31	σ Scorpii -	4	5 27 10	16 11 18.65	25 11 48.1	N. 25 52
31	α Scorpii -	1	8 50 17	16 19 26.57	S. 26 3 59.0	N. 50 40
Nov. 1	A Ophiuchi	4.5	3 25 8	17 5 21.37	S. 26 21 29.0	S. 51 36
1	3 Sagittarii	5	15 56 42	17 37 19.66	27 45 45.5	S. 16 3
1	(359) Sagitt.	5	23 50 42	17 57 47.26	28 28 6.5	N. 9 53
2	φ Sagittarii	4.5	14 17 13	18 35 30.13	S. 27 9 6.7	S. 69 16
2	τ Sagittarii	4	22 25 45	18 56 47.65	S. 27 54 7.4	S. 7 8
4	(170) Capric.	6	8 7 24	20 23 11.57	25 29 15.6	N. 46 25
5	35 Capricorni	6	6 38 49	21 18 2.05	21 53 40.3	65 16
5	ε Capricorni	5	10 51 58	21 27 59.48	S. 20 11 25.0	N. 14 30
5	κ Capricorni	5	13 15 31	21 33 35.58	S. 19 36 11.1	N. 9 25
6	f Aquarii -	6	10 19 12	22 21 35.31	15 24 43.7	49 21
7	ψ ¹ Aquarii -	5.6	7 18 32	23 7 23.74	9 58 13.0	49 11
7	ψ ² Aquarii -	5	8 16 59	23 9 28.96	S. 10 4 0.9	N. 70 45
8	p Piscium -	5	3 36 18	23 50 22.81	S. 4 27 17.5	N. 54 8
8	q Piscium -	5	5 6 16	23 53 31.45	S. 3 55 45.3	47 50
9	e Piscium -	5	12 56 33	1 0 1.97	N. 4 47 32.6	59 41
10	54 Ceti -	6	8 55 9	1 42 15.99	N. 10 14 23.0	N. 53 43

ELEMENTS

for facilitating the Computation of Occultations of certain Stars by the Moon.

Year Month	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R. A. of ♄ and ♀.	At Greenwich Mean Time of ♄			Limiting Parallels.
				Apparent R. A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.	
			h m s	h m s	° ' "	♄	Latitude.
11	♈ Arietis -	5	11 33 13	2 40 16.15	N. 16 47 18.4	N. 46 14	90 N. 5 N.
11	♈ Arietis -	6	14 26 37	2 46 42.72	17 40 28.4	30 57	78 N. 9 S.
11	♈ Arietis -	4	21 24 51	3 2 22.81	19 6 41.2	N. 32 21	81 N. 6 S.
11	♈ Arietis -	5	22 50 23	3 5 36.45	N. 20 26 30.4	S. 30 14	16 N. 62 S.
12	b Pleiadum	4.5	11 47 18	3 35 16.23	N. 23 36 2.6	S. 74 40	45 S. 66 S.
12	d Pleiadum	5	12 25 2	3 36 43.60	23 26 25.4	58 33	15 S. 67 S.
12	η Tauri -	3	12 54 39	3 37 52.24	23 36 4.1	63 8	21 S. 66 S.
12	f Pleiadum	5	13 37 58	3 39 32.76	N. 23 33 17.1	S. 53 0	8 S. 66 S.
14	β Tauri -	2	6 14 57	5 16 3.66	N. 28 27 58.3	S. 57 22	18 S. 62 S.
14	C Tauri -	4.5	17 29 37	5 43 9.07	27 34 8.1	N. 31 18	84 N. 11 N.
16	ι Geminor.	4	8 40 7	7 15 39.54	28 6 54.3	S. 34 23	9 N. 56 S.
16	ν Geminor.	5	13 10 18	7 25 55.91	N. 27 15 5.9	S. 0 45	43 N. 22 S.
16	c Geminor.	6	16 50 13	7 34 13.26	N. 26 10 0.1	N. 47 32	90 N. 24 N.
16	φ Geminor.	5	21 0 34	7 43 34.46	27 10 50.7	S. 34 34	9 N. 58 S.
17	λ Cancrī -	6	9 26 8	8 10 53.03	24 31 43.7	N. 48 29	90 N. 21 N.
19	η Leonis -	3.4	14 37 39	9 58 28.95	N. 17 33 7.3	S. 34 43	10 N. 71 S.
22	n Virginis -	6	15 29 45	12 10 24.68	N. 0 7 0.6	N. 40 36	90 N. 6 S.
22	η Virginis -	3.4	16 9 26	12 11 35.67	N. 0 14 12.9	23 50	69 N. 22 S.
29	(359) Sagitt.	5	6 48 57	17 57 47.17	S. 28 28 5.4	N. 15 16	30 N. 29 S.
29	φ Sagittarii	4.5	20 54 9	18 35 29.96	S. 27 9 5.9	S. 62 54	43 S. 90 S.
30	τ Sagittarii	4	4 51 8	18 56 47.43	S. 27 54 6.7	S. 0 13	18 N. 44 S.
Dec. 2	ε Capricorni	5	16 20 46	21 27 59.14	20 11 26.1	N. 24 42	56 N. 22 S.
2	κ Capricorni	5	18 43 34	21 33 35.24	19 36 12.3	19 42	52 N. 26 S.
4	ψ Aquarii -	5	13 55 17	23 9 28.67	S. 10 4 2.8	N. 81 30	80 N. 44 N.
5	p Piscium -	5	9 32 23	23 50 22.57	S. 4 27 19.3	N. 64 20	86 N. 15 N.
5	q Piscium -	5	11 4 2	23 53 31.72	55 47.0	57 59	86 N. 8 N.
6	e Piscium -	5	19 36 1	1 0	7 31.5	67 51	90 N. 21 N.
8	π Arietis -	5	19 18 42	2 40 1	7 18.8	N. 49 54	90 N. 9 N.
9	δ Arietis -	4	5 22 19	3 2 21	41.9	N. 34 57	85 N. 3 S.
9	ζ Arietis -	5	6 49 1	5 2	31.3	S. 27 47	18 N. 60 S.
9	65 Arietis	6	11 4 1		38.1	N. 33 41	84 N. 3 S.
9	b Pleiadum	4.5	19 39		3.9	S. 73 38	44 S. 66 S.
9	d Pleiadum	5			26.6	S. 57 35	15 S. 67 S.
9	η Tauri -				5.4	62 13	21 S. 66 S.
9	f Pleiadum				18.4	52 10	8 S. 66 S.
11	β Tauri -				59.4	S. 60	52 S.

ELEMENTS

for facilitating the Computation of Occultations of certain Stars by the M

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R. A. of ♄ and ♀.	At Greenwich Mean Time of ♄			Li Pa
				Apparent R. A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.	
			^h ^m ^s	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]
Dec. 12	C Tauri -	4.5	2 10 3	5 43 9.70	N. 27 34 8.8	N. 26 50	76 N
13	47 Geminor.	6	11 4 43	7 1 20.47	27 7 4.1	N. 38 23	90 N
13	ε Geminor.	4	17 15 59	7 15 40.36	28 6 53.4	S. 42 29	15
13	ν Geminor.	5	21 44 51	7 25 56.75	N. 27 15 4.6	S. 9 15	352
14	φ Geminor.	5	5 32 38	7 43 35.36	N. 27 10 49.1	S. 43 44	28
14	ω ¹ Cancri -	6	8 54 57	7 51 7.43	25 49 54.3	N. 18 0	642
14	λ Cancri -	6	17 53 58	8 10 53.92	24 31 41.3	N. 38 18	901
16	η Leonis -	3.4	22 54 16	9 58 29.89	N. 17 33 2.4	S. 48 32	51
20	η Virginis -	3.4	0 58 4	12 11 36.58	N. 0 14 7.0	N. 8 59	531
24	σ Scorpii -	4	23 21 54	16 11 19.38	S. 25 11 48.1	24 20	491
25	α Scorpii -	1	2 39 49	16 19 27.28	26 3 58.7	49 51	641
29	ε Capricorni	5	23 34 44	21 27 58.96	20 11 26.4	37 28	671
30	κ Capricorni	5	1 53 20	21 33 35.05	S. 19 36 12.7	N. 32 44	641

ECLIPSES OF THE SUN AND MOON.

In the Year 1837, there will be three Eclipses of the Sun, and two of the Moon. The only Eclipses visible at Greenwich will be those of the Moon on April 20, October 13.

—A Partial Eclipse of the SUN, April 4, 1837.

Begins on the Earth generally at 18^h 58^m.5, Mean Time at Greenwich.

Longitude 145° 5' E. of Greenwich. Latitude 73° 43' S.

Greatest Eclipse at 19^h 35^m.7. Mag. (Sun's diam. = 1) 0.071.

Longitude 145° 42' E. of Greenwich. Latitude 61° 26' S.

Ends on the Earth generally at 20^h 12^m.9.

Longitude 140° 36' E. of Greenwich. Latitude 48° 47' S.

This Eclipse will only be visible in a small portion of the Southern Ocean.

—A Total Eclipse of the MOON, April 20, 1837.

First contact with Penumbra, at	- -	^h 5 ^m 47.6	} Mean Time at Greenwich.
First contact with dark Shadow	- - -	6 49.5	
First total Immersion in dark Shadow		7 50.6	
Middle of Eclipse	- - - - -	8 40.6	
Last total Immersion in dark Shadow		9 30.5	
Last contact with dark Shadow	- - -	10 31.7	
Last contact with Penumbra	- - -	11 33.5	

Magnitude of the Eclipse (Moon's diameter = 1) 1.659, on the Southern limb.

At these times respectively the Moon will be in the Zenith of the places whose positions are,

Longitude	91° 29'	Latitude	10° 57' S.
	76 29		11 12
	61 42		11 27
	49 35	} E. of Greenwich.	
	37 30		
	22 41		
	7 43		

Angle from North Pole of { first contact v
last contact

At Greenwich the Moon will rise partial

III.—*A Partial Eclipse of the SUN, May 4, 1837.*

Begins on the Earth generally at 4^h 58^m.5, Mean Time at Greenwich

Longitude 173° 43' W. of Greenwich. Latitude 26° 35' N

Greatest Eclipse at 6^h 48^m.7. Mag. (Sun's diam. = 1) 0.635.

Longitude 133° 40' E. of Greenwich. Latitude 62° 28' N

Ends on the Earth generally at 8^h 38^m.8.

Longitude 2° 9' E. of Greenwich. Latitude 67° 7' N

This Eclipse will be visible in the Pacific and North Atlantic Oceans, greater part of North America.

IV.—*A Total Eclipse of the MOON, Oct. 13, 1837.*

First contact with Penumbra, at	- -	8 ^h 32 ^m .4	} Mean Time at Greenwich.
First contact with dark Shadow	- -	9 30.5	
First total Immersion in dark Shadow		10 30.7	
Middle of Eclipse	- - - - -	11 16.7	
Last total Immersion in dark Shadow		12 2.7	
Last contact with dark Shadow	- -	13 2.9	
Last contact with Penumbra	- - -	14 1.0	

Magnitude of the Eclipse (Moon's diameter = 1) 1.521, on the North

At these times respectively the Moon will be in the Zenith of the places whose positions are,

Longitude 47° 11' E.	} of Greenwich.	Latitude 7° 6' N
33 8		7 23
18 35		7 39
7 28 E.		7 52
3 39 W.		8 5
18 13		8 22
32 15 W.		8 38 N

Angle from North Pole of { first contact with Shadow 52°, towards the
last contact with Shadow 107°, towards the

V.—*A Partial Eclipse of the SUN, Oct. 28—29, 1837.*

Begins on the Earth generally Oct. 28^d 21^h 41^m.1 Mean Time at Greenwich

Longitude 67° 26' W. of Greenwich. Latitude 30° 36' N

Greatest Eclipse Oct. 28^d 23^h 18^m.8. Mag. (Sun's diam. = 1) 0.457

Longitude 110° 26' W. of Greenwich. Latitude 62° 2' N

Ends on the Earth generally Oct. 29^d 0^h 56^m.4.

Longitude 128° 18' E. of Greenwich. Latitude 74° 1' N

This Eclipse will be visible in the Southern extremity of South America and the Southern Ocean.

ELEMENTS OF THE ECLIPSES OF THE SUN.

1837.	April 4.	May 4.	Oct. 28—29.
Mean Time of ϕ in R.A.	^h 18 ^m 8 ^s 34.5	^h 7 ^m 44 ^s 51.2	^d 29 ^h 0 ^m 26 ^s 42.6
Declination - - - -	N. 4 20 48.4	N. 17 18 34.3	S. 14 50 34.0
Declination - - - -	N. 6 0 46.1	N. 16 4 51.8	S. 13 30 9.5
Parallax Motion in R. A. - -	31 1.2	31 54.0	30 28.7
Parallax Motion in R. A. - -	2 16.8	2 24.3	2 25.8
Parallax Motion in Declination -	N. 16 16.8	N. 12 35.1	S. 13 25.1
Parallax Motion in Declination -	N. 0 57.0	N. 0 43.2	S. 0 49.8
Horizontal Parallax	58 40.4	56 57.3	56 24.5
Horizontal Parallax	8.6	8.5	8.6
Semidiameter - - -	15 59.3	15 31.2	15 22.3
Semidiameter - - -	15 59.7	15 52.1	16 8.2

ELEMENTS OF THE ECLIPSES OF THE MOON.

1837.	April 20, at 8 ^h 30 ^m Mean Time at Greenwich.	October 13, at 11 ^h 15 ^m Mean Time at Greenwich.
Right Ascension - - - -	^h 13 ^m 53 ^s 27.44	^h 1 ^m 15 ^s 41.05
Right Ascension - - - -	1 53 36.78	13 15 23.48
Declination - - - -	S. 11 32 12.6	N. 7 48 36.6
Declination - - - -	N. 11 39 55.7	S. 7 58 55.1
Parallax Motion in R. A. - -	30 43.2	32 17.7
Parallax Motion in R. A. - -	2 19.8	2 19.2
Parallax Motion in Declination -	S. 14 32.6	N. 16 35.3
Parallax Motion in Declination -	N. 0 51.2	S. 0 56.0
Horizontal Parallax	57 17.0	59 31.7
Horizontal Parallax	8.5	8.6
Semidiameter - - -	15 36.6	16 13.3
Semidiameter - - -	15 55.6	16 4.1

MEAN TIME.

JANUARY.

d	h	m		o	i
1	11	10	☿ greatest Hel. Lat. S.		
2	9	7	♄ ☿ - - -	♄ 3 0 N.	
4	5	23	♀ ☿ - - -	♀ 4 16 N.	
7	9	30	☿ ☿ - - -	☿ 3 7 N.	
8	17	50	♂ ☿ ♀ Leonis	* 0 58 N.	
9	9	30	♄ ☿ - - -	♄ 4 11 N.	
9	22	11	♀ ☿ ρ Ophiuchi	* 0 51 N.	
11	20	36	♀ ☿ ε ² Ophiuchi	* 1 47 S.	
14	3	32	♀ ☿ D Ophiuchi	* 0 42 N.	
17	4	6	♀ ☿ 4 Sagitt.	* 1 14 S.	
19	17	20	☿ greatest elong.	18 37 E.	
19	19	36	♀ ☿ μ ¹ Sagitt.	* 1 36 N.	
20	10	42	☿ in ☿		
22	7	4	♄ ☿ - - -	♄ 4 15 S.	
23	1	1	♂ ☿ - - -	♂ 0 26 S.	
25	0	3	☿ in Perihelion.		
25	18	45	☿ Stationary.		
29	20	37	♄ ☿ - - -	♄ 3 31 N.	

MARCH.

d	h	m			
1	23	5	☿ greatest elong.		
4	7	16	☿ ☿ - - -		
4	21	16	♀ ☿ - - -		
4	23	24	♂ ☿ ♀ - - -		
5	12	19	♄ ☿ - - -		
6	22	41	☿ ☿ γ Capricor.	*	
8	8	25	☿ ☿ δ Capricor.	*	
9	23	49	☿ in Aphelion.		
11	6	33	♀ in Aphelion.		
12	15	59	♀ ☿ ♄ - - -		
13	22	9	♂ in Aphelion.		
17	8	7	♂ ☿ - - -		
17	8	48	♄ ☿ - - -		
18	5	33	☿ ☿ ♄ - - -		
18	20	53	♂ Stationary.		
20	7	23	☉ ent. ∞. Spring eq		
23	0	50	♂ ☿ ♀ - - -		
25	8	10	♄ ☿ - - -		
30	10	24	☿ greatest Hel. La		

FEBRUARY.

d	h	m		o	i
1	14	33	♄ ☉		
3	1	12	♀ ☿ - - -	♀ 4 55 N.	
4	5	29	☿ in Inf. ☉		
4	8	16	☿ greatest Hel. Lat. N.		
4	16	6	☿ ☿ - - -	☿ 8 59 N.	
5	0	0	♀ in ☿		
5	6	41	♄ ☉		
5	14	45	♂ ☉		
5	22	52	♄ ☿ - - -	♄ 4 0 N.	
7	20	0	♂ greatest Hel. Lat. N.		
16	4	22	☿ Stationary.		
17	3	38	☿ ☿ - - -	☿ 2 47 N.	
18	6	32	♄ ☿ - - -	♄ 4 14 S.	
18	11	15	♂ ☿ - - -	♂ 0 35 S.	
22	18	41	♄ ☉		
24	19	26	♄ Stationary.		
26	3	48	♄ ☿ - - -	♄ 3 57 N.	
27	20	22	☿ in ☿		

APRIL.

d	h	m			
1	23	38	♄ ☿ - - -		
2	17	29	☿ ☿ - - -		
2	20	31	♀ greatest Hel. L		
3	14	30	♄ Stationary.		
3	21	13	♀ ☿ - - -		
3	22	36	☿ ☿ - - -		
4	-	-	☉ eclipsed, invis. at		
13	15	59	♄ ☿ - - -		
13	19	16	♂ ☉, intens. of l		
13	23	5	♂ ☿ - - -		
14	17	53	☿ in Sup. ☉		
18	9	55	☿ in ☿		
20	-	-	☿ eclipsed, vis. at C		
21	12	10	♄ ☿ - - -		
22	23	26	☿ in Perihelion.		
29	3	51	♄ ☉		
29	8	6	♄ ☿ - - -		

MEAN TIME.

MAY.				JULY.				
m		o	i	d	h	m	o	i
31	♂ greatest Hel. Lat. N.			1	15	0	♀ in Perihelion.	
48	♀ ♂ - - - ♀ 1 51 S.			1	20	0	☉ in Apogee.	
39	♂ ☉			1	23	14	♂ ♂ ♂ Leonis * 1 1 N.	
-	☉ eclipsed, invis. at Greenw ^h .			3	11	25	♀ ♂ - - - ♀ 3 50 S.	
40	♀ ♂ - - - ♀ 0 33 S.			5	2	46	♀ ♂ ♂ Tauri * 0 1 S.	
52	♂ ♂ - - - ♂ 4 30 S.			5	6	20	♂ ♂ ♂ Leonis * 1 22 S.	
45	♂ ☐ ☉			5	11	47	♂ ♂ - - - ♂ 4 7 S.	
31	♂ ♂ - - - ♂ 3 23 S.			8	3	48	♂ ♂ - - - ♂ 2 42 S.	
54	♀ greatest elong. 21 46 E.			12	3	20	♀ ♂ μ Geminor. * 0 10 S.	
12	♀ in Sup. ♂ ☉			12	8	28	♂ ♂ - - - ♂ 3 46 N.	
27	♂ ♂ - - - ♂ 3 52 N.			14	22	28	♂ Stationary.	
47	♂ ♂ α Leonis * 1 4 S.			15	9	13	♀ in ♍	
59	♀ Stationary.			16	0	12	♂ ♂ β Virginis * 0 10 N.	
41	♂ ♂ - - - ♂ 3 43 N.			19	22	41	♀ in Perihelion.	
38	♀ in ♊			20	4	48	♂ ♂ - - - ♂ 3 18 N.	
21	♀ in ♋			23	15	26	♀ greatest Hel. Lat. N.	
47	♂ ☐ ☉			26	21	28	♀ ♂ ♂ - - - ♀ 0 44 N.	
				28	6	23	♀ in Sup. ♂ ☉	
				29	12	16	♂ ♂ η Virginis * 1 7 N.	
				30	6	22	♀ ♂ α Leonis * 1 7 S.	
				30	6	47	♀ greatest Hel. Lat. N.	

JUNE.				AUGUST.				
m		o	i	d	h	m	o	i
32	♀ ♂ - - - ♀ 3 33 S.			1	8	8	♀ ♂ - - - ♀ 3 9 S.	
34	♀ ♂ - - - ♀ 5 55 S.			2	5	29	♂ ♂ - - - ♂ 3 49 S.	
23	♀ ♂ ♀ - - - ♀ 2 25 S.			2	20	2	♀ ♂ - - - ♀ 2 48 S.	
0	♀ in Aphelion.			2	22	6	♂ ☐ ☉	
45	♀ in Inf. ♂ ☉			5	21	13	♂ ♂ - - - ♂ 1 27 S.	
54	♂ ♂ ρ Leonis * 1 8 S.			7	9	9	♀ ♂ ♂ - - - ♀ 0 48 N.	
58	♂ ♂ - - - ♂ 4 22 S.			8	17	8	♂ ♂ - - - ♂ 3 57 S.	
3	♂ ♂ - - - ♂ 3 23 S.			16	13	42	♂ ♂ - - - ♂ 3 57 S.	
0	♂ Stationary.			20	8	27	♂ ♂ θ Virginis * 1	
23	♂ ♂ - - - ♂ 3 44 N.			21	3	45	♀ ♂ ♂ Leonis * 0	
12	♀ Stationary.			21	17	57	♂ ☐ ☉	
37	☉ enters ♊. Summer comm ^s .			22	18	54	♀	
9	♂ ♂ - - - ♂ 3 30 N.			24	10	7	♂	
35	♂ ♂ χ Leonis * 0 29 N.			25	11	15	♀ Virginis *	
42	♀ greatest Hel. Lat. S.			29	15	50	☉	
0	♀ ♂ - - - ♀ 6 56 S.			29	23	42	♂ - - - ♂	
2	♀ greatest elong. 21 28 W.			30	15	0	♂ Libra *	

MEAN TIME.

SEPTEMBER.					OCTOBER.				
d	h	m			d	h	m		
1	20	46	♂♂♂ - - -	♂ 3 25 S.	20	15	6	♂♂♂ Librae *	
1	22	15	♀ in Aphelion.		20	18	53	♀ greatest elong.	
2	5	41	♀♂♂ - - -	♀ 0 38 S.	21	22	26	♀ in Aphelion.	
3	16	12	♂♂♂ - - -	♂ 0 10 N.	22	21	52	♂♂♂ Scorpii *	
3	19	12	☿♂♂, intens. of light 1.030		24	12	42	♀♂♂ - - -	
5	2	17	♂♂♂ - - -	♂ 4 12 N.	24	15	55	♂♂♂ β ¹ Scorpii *	
9	10	57	♀ greatest elong.	26 43 E.	25	2	23	♂♂♂ ω ¹ Scorpii *	
12	22	47	♂♂♂ - - -	♂ 3 18 N.	25	6	52	♂♂♂ ω ² Scorpii *	
17	1	49	♂♂♂ λ Virginis *	0 50 N.	26	6	2	♀ greatest Hel. La	
17	16	45	♀ in ☿		27	15	35	♀♂♂ - - -	
22	8	59	♀ greatest Hel. Lat. S.		27	17	4	♀♂♂ χ Leonis *	
22	17	38	♀ Stationary.		28			☉ eclips., invis. at G	
22	18	31	☉ enters ♋. Autumn comm ^s .		29				
23	23	8	♀♂♂ λ Virginis *	0 53 N.	29	14	57	♀♂♂ A Ophiuchi *	
26	18	17	♀♂♂ - - -	♀ 3 10 S.	30	0	43	♂♂♂ - - -	
28	21	39	♂♂♂ α ² Libræ *	0 48 N.	30	21	42	♀♂♂ θ Ophiuchi *	
30	3	22	♀♂♂ - - -	♀ 4 11 S.	31	7	33	♂♂♂ - - -	
30	17	44	♀♂♂ α ² Libræ *	1 6 N.					
OCTOBER.					NOVEMBER.				
d	h	m			d	h	m		
2	10	58	♀♂♂ - - -	♀ 1 21 N.	1	9	4	♀♂♂ - - -	♀
2	11	48	♂♂♂ - - -	♂ 1 45 N.	1	17	33	♀♂♂ α ² Ophiuchi *	
2	12	32	♂♂♂ - - -	♂ 4 24 N.	6	12	47	♂♂♂ - - -	♂
3	3	36	♂♂♂ ♀ - - -	♂ 2 38 S.	11	20	32	♂♂♂ ☉	
3	5	9	♀♂♂ ♀ - - -	♀ 3 1 S.	12	14	24	♀♂♂ λ Sagitt. *	
3	7	0	♀♂♂♂ - - -	♀ 0 24 S.	13	13	17	♀ greatest Hel. La	
5	7	57	♀ in Inf. ♂☉		13	20	0	♂ Stationary.	
10	6	39	♂♂♂ - - -	♂ 3 24 N.	16	0	14	♀♂♂ φ Sagitt. *	
11	6	36	♀♂♂ κ Libræ *	1 18 N.	17	3	23	♀♂♂ ♀ - - -	♀
11	8	29	♀ in ☿		17	21	39	♀♂♂ σ Sagitt. *	
13	-	-	☿ eclipsed, vis. at Greenwich.		18	18	9	♀ in ☿	
13	13	35	♀♂♂ λ Libræ *	1 31 N.	21	5	43	♀♂♂ - - -	♀
13	16	7	♀ Stationary.		24	11	2	♀ in Sup. ♂☉	
14	22	38	♀♂♂ β ¹ Scorpii *	0 32 S.	26	4	23	♀♂♂ h ² Sagitt. *	
15	21	56	♀ in Perihelion.		26	13	27	♂☉	
16	6	19	♀♂♂ ω ¹ Scorpii *	1 48 N.	26	15	3	♂♂♂ - - -	♂
16	9	3	♀♂♂ ω ² Scorpii *	1 38 N.	27	3	0	♀♂♂ σ Leonis *	
16	19	13	♂♂♂ κ Libræ *	0 37 N.	27	18	10	♀♂♂ - - -	♀
17	2	23	♂♂♂ ☉, intens. of light 1.144		28	21	31	♀ in Aphelion.	
19	22	48	♀♂♂ g Ophiuchi *	0 2 S.	29	3	37	♂♂♂ - - -	♂

MEAN TIME.

DECEMBER.				DECEMBER.			
h	m		°	d	h	m	°
1	9	♀♂♄ - - - ♀	2 34 N.	23	2	24	♀ greatest elong. 47 15 E.
8	30	♂♄♄ - - - ♀	3 15 N.	24	0	43	♀♂♄♄ Capricor. * 1 1 S.
2	10	♂♄♄, intens. of light 1:146		24	6	27	♂♄♄ - - - ♀ 5 10 N.
3	5	♂♄♄		25	20	8	♀♂♄♄ Capricor. * 1 12 S.
6	12	♀♂♄♄ Capricor. *	0 53 S.	27	12	23	♀♂♄♄ Capricor. * 0 40 N.
9	15	♂♄♄ - - - ♀	1 39 S.	28	0	34	♂♄♄ - - - ♀ 4 0 N.
8	14	♀ greatest Hel. Lat. S.		28	9	10	♀♄♄ - - - ♀ 3 15 N.
3	34	♀♄♄♄ Capricor. *	0 33 N.	30	10	57	♀♄♄ - - - ♀ 3 12 N.
4	24	♂♄♄♄ Leonis *	1 54 S.	31	2	17	♂♄♄ - - - ♀ 2 58 N.
2	33	♀♄♄♄ - - - ♀	1 11 S.	31	3	16	♀♄♄♄ Aquarii * 1 10 S.
1	53	♄ enters ♄. Winter comm.*					

ELEMENTS FOR DETERMINING THE GEOCENTRIC POSITION,
MAGNITUDE, AND APPEARANCE OF SATURN'S RING.

Mean Noon.	p	a	b	l	l'
Jan. 1	+ 1° 1' 7"	36° 89'	+ 13° 49'	+ 21° 26' 9"	+ 19° 5'
Feb. 10	1 20' 3"	39° 28'	14° 66'	21 54' 9"	20 2'
Mar. 22	1 17' 4"	41° 82'	15° 45'	21 41' 0"	20 4'
May 1	0 56' 9"	43° 08'	15° 40'	20 57' 1"	21
June 10	0 34' 8"	42° 15'	14° 59'	20 14' 7"	21 2'
July 20	0 27' 3"	39° 74'	13° 68'	20 8' 4"	21 4'
Aug. 29	0 40' 1"	37° 22'	13° 21'	20 47' 0"	22 1'
Oct. 8	1 9' 6"	35° 53'	13° 26'	21 54' 9"	22 3'
Nov. 17	1 48' 3"	35° 05'	13° 77'	23 7' 6"	22 5'
Dec. 27	2 26' 1"	35° 88'	14° 63'	24 4' 3"	23
— 31	+ 2 29' 4"	36° 03'	+ 14° 73'	+ 24 8' 4"	+ 23 10'

p denotes the inclination of the Northern semi-minor axis of the Ring to the circle of Declination; + East, — West.

a the *major* axis of the Ring.

b the *minor* axis; + North surface visible,
— South surface visible.

l the elevation of the Earth above the plane of the Ring, as seen from Saturn; + North, — South.

l' the elevation of the Sun above the plane of the Ring, as seen from Saturn; + North, — South.

TABLE,
SHOWING THE MEAN TIME OF THE GREATEST LIBRATION OF THE MOON'S
APPARENT DISC.

	d	h	m	
Jan.	12	17	59	S. W.
	28	21	48	S. E.
Feb.	10	1	38	S. W.
	25	15	42	S. E.
Mar.	10	6	43	S. W.
	24	4	50	S. E.
Apr.	7	3	24	S. W.
	19	16	22	S. E.
May	4	7	52	S. W.
	17	1	57	S. E.
	30	15	46	S. W.
June	13	23	37	S. E.
	26	13	22	S. W.
July	12	3	4	S. E.
	24	8	46	S. W.
Aug.	9	7	59	S. E.
	21	12	19	S. W.
Sept.	6	9	10	S. E.
	18	17	25	S. W.
Oct.	3	18	33	S. E.
	16	19	19	S. W.
	29	23	44	S. E.
Nov.	13	11	43	S. W.
	25	20	17	S. E.
Dec.	10	6	33	S. W.
	23	14	12	S. E.

The Moon's Libration is here supposed to take place in the plane of her Orbit:—and by the time of the greatest Libration of her Apparent Disc is to be understood the instant at which, to an observer at the centre of the Earth, the variation of the Disc from its mean state has attained its maximum.

The right-hand column indicates the quadrant of the Moon's Disc in which the Libration takes place, and in which the greatest change of the Moon's surface will become visible.

TABLE,
SHOWING THE ILLUMINATED PORTION OF THE DISCS OF VENUS AND MARS.

DATE.	VENUS.	MARS.
Jan. 15	0.864	0.978
Feb. 14	0.921	0.996
Mar. 15	0.961	0.999
Apr. 15	0.989	0.997
May 15	1.000	0.993
June 15	0.991	0.989
July 15	0.961	0.978
Aug. 15	0.910	0.961
Sept. 15	0.843	0.921
Oct. 15	0.764	0.864
Nov. 15	0.666	0.764
Dec. 15	0.545	0.666

Numbers given in this Table represent the illuminated portion of the apparent Diameters of the considered as unity.

474 OPPOSITION OF MARS, 1837.

EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
FEBRUARY 5, 1837.

Date.	Star.	Magnitude.	Apparent Place.		Semidiameter for	
			Right Ascension.	Declination North.	R. A.	Dec.
1837			^h ^m ^s	[°] ['] ["]	^s	["]
Jan. 23	Mars - - -	N.	9 44 4'56	18 18 11'1	0'45	6'4
	* - - - (A)	8	9 46 58'84	18 18 40'9		
	η Leonis - -	3.4	9 58 27'33	17 33 16'2		
24	Mars - - -	S.	9 42 44'94	18 26 11'5	0'45	6'5
	* - - - (z)	9	9 44 28'23	18 25 9'1		
	η Leonis - -	3.4	9 58 27'35	17 33 16'2		
25	* - - - (u)	8.9	9 37 0'95	18 38 14'4		
	Mars - - -	N.	9 41 23'07	18 34 15'2	0'45	6'5
	η Leonis - -	3.4	9 58 27'37	17 33 16'1		
26	Mars - - -	S.	9 39 59'09	18 42 21'1	0'45	6'5
	* - - - (x)	7.8	9 40 5'54	18 48 38'9		
	η Leonis - -	3.4	9 58 27'39	17 33 16'1		
27	* - - - (v)	8	9 37 46'94	18 52 1'8		
	Mars - - -	N.	9 38 33'14	18 50 28'3	0'46	6'5
	η Leonis - -	3.4	9 58 27'41	17 33 16'0		
28	* - - - (p)	8	9 24 22'51	19 0 8'1		
	Mars - - -	S.	9 37 5'37	18 58 35'6	0'46	6'5
	η Leonis - -	3.4	9 58 27'43	17 33 16'0		
29	* - - - (q)	8	9 25 21'98	19 7 30'2		
	Mars - - -	N.	9 35 35'90	19 6 42'2	0'46	6'5
	η Leonis - -	3.4	9 58 27'45	17 33 15'9		
30	Mars - - -	S.	9 34 4'91	19 14 46'9	0'46	6'5
	* - - - (y)	8.9	9 40 23'99	19 16 48'0		
	η Leonis - -	3.4	9 58 27'47	17 33 15'9		
31	Mars - - -	N.	9 32 32'56	19 22 48'8	0'46	6'6
	* - - - (t)	7	9 36 49'11	19 25 47'0		
	η Leonis - -	3.4	9 58 27'48	17 33 15'8		
Feb. 1	Mars - - -	N.	9 30 59'03	19 30 46'9	0'46	6'6
	* - - - (s)	7	9 35 26'56	19 36 32'5		
	η Leonis - -	3.4	9 58 27'50	17 33 15'8		
2	* - - - (k)	7	9 17 25'99	19 45 32'5		
	Mars - - -	S.	9 29 24'48	19 38 40'1	0'46	6'6
	η Leonis - -	3.4	9 58 27'51	17 33 15'8		

OPPOSITION OF MARS, 1837. 475

EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
FEBRUARY 5, 1837.

Date.	Star.	Magnitude.	Apparent Place.		Semidiameter for		Hor. Par.
			Right Ascension.	Declination North.	R. A.	Dec.	
1837			^h ^m ^s	[°] ['] ["]	^s	["]	["]
Feb. 3	* - - - (k)	7	9 17 26.01	19 45 32.5			
	Mars - - -	N.	9 27 49.12	19 46 27.5	0.46	6.6	12.7
	γ Leonis - -	3.4	9 58 27.53	17 33 15.7			
4	* - - - (l)	8	9 19 51.95	19 59 33.2			
	Mars - - -	S.	9 26 13.14	19 54 7.8	0.46	6.6	12.7
	γ Leonis - -	3.4	9 58 27.54	17 33 15.7			
5	δ Cancrī - -	4.5	8 35 26.03	18 44 58.6			
	* - - - (n)	9	9 20 51.20	20 10 11.7			
	Mars - - -	N.	9 24 36.70	20 1 40.1	0.46	6.6	12.7
6	δ Cancrī - -	4.5	8 35 26.03	18 44 58.6			
	* - - - (n)	9	9 20 51.21	20 10 11.7			
	Mars - - -	S.	9 23 0.03	20 9 3.4	0.46	6.6	12.7
7	δ Cancrī - -	4.5	8 35 26.04	18 44 58.6			
	Mars - - -	N.	9 21 23.29	20 16 16.7	0.46	6.6	12.7
	* - - - (r)	9	9 27 51.01	20 19 31.9			
8	δ Cancrī - -	4.5	8 35 26.04	18 44 58.6			
	* Leonis						
	N° 1141 A.S.C. }	6.7	9 15 35.76	20 29 14.3			
	Mars - - -	S.	9 19 46.73	20 23 19.2	0.46	6.6	12.7
9	δ Cancrī - -	4.5	8 35 26.05	18 44 58.6			
	* Leonis						
	N° 1141 A.S.C. }	6.7	9 15 35.77	20 29 14.4			
	Mars - - -	N.	9 18 10.49	20 30 10.2	0.46	6.6	12.7
10	δ Cancrī - -	4.5	8 35 26.05	18 44 58.6			
	Mars - - -	S.	9 16 34.81	20 36 48.9	0.46	6.6	12.7
	* - - - (o)	7	9 22 34.89	20 43 21.0			
11	δ Cancrī - -	4.5	8 35 26.05	18 44 58.6			
	Mars - - -	N.	9 14 59.84	20 43 14.9			12.6
	* - - - (o)	7	9 22 34.90	20 43 21.0			
12	δ Cancrī - -	4.5	8 35 26.06	18 44 58.7			
	Mars - - -	S.	9 13 25.80	20 27.0		6.5	12.6
	* - - - (m)	9	9 20 20.17	20 41.0			
13	δ Cancrī - -	4.5	8 35 26.06	18 44 58.7			

EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
FEBRUARY 5, 1837.

Date.	Star.	Magnitude.	Apparent Place.		Semidiameter for		Dist. Pa.
			Right Ascension.	Declination North.	R. A.	Dec.	
1837			^h ^m ^s	[°] ['] ["]	^s	["]	
Feb. 13	Mars - - -	N.	9 11 52.83	20 55 25.1	0.46	6.5	124
	* - - - (i)	7	9 14 1.62	21 3 20.9			
14	γ Cancri - -	5	8 33 51.92	22 3 1.8			
	Mars - - -	S.	9 10 21.13	21 1 8.6	0.46	6.5	125
	* - - - (i)	7	9 14 1.63	21 3 20.9			
15	γ Cancri - -	5	8 33 51.92	22 3 1.8			
	Mars - - -	N.	9 8 50.85	21 6 36.9	0.46	6.5	126
	* - - - (h)	7.8	9 10 24.67	21 13 45.6			
16	γ Cancri - -	5	8 33 51.92	22 3 1.9			
	Mars - - -	S.	9 7 22.15	21 11 49.8	0.46	6.4	127
	* - - - (h)	7.8	9 10 24.67	21 13 45.6			
17	γ Cancri - -	5	8 33 51.92	22 3 1.9			
	* - - - (e)	8.9	9 3 26.31	21 20 30.5			
	Mars - - -	N.	9 5 55.17	21 16 47.3	0.46	6.4	128
18	γ Cancri - -	5	8 33 51.91	22 3 2.0			
	* - - - (e)	8.9	9 3 26.31	21 20 30.5			
	Mars - - -	S.	9 4 30.06	21 21 28.8	0.46	6.4	129
19	γ Cancri - -	5	8 33 51.91	22 3 2.0			
	Mars - - -	N.	9 3 6.93	21 25 54.4	0.45	6.4	130
	* - - - (g)	8	9 9 20.79	21 29 46.3			
20	γ Cancri - -	5	8 33 51.91	22 3 2.0			
	Mars - - -	S.	9 1 45.94	21 30 3.9	0.45	6.3	131
	* - - - (g)	8	9 9 20.80	21 29 46.3			
21	γ Cancri - -	5	8 33 51.91	22 3 2.1			
	Mars - - -	N.	9 0 27.22	21 33 56.8	0.45	6.3	132
	* - - - (f)	9	9 4 8.26	21 34 27.0			
22	γ Cancri - -	5	8 33 51.91	22 3 2.1			
	* - - - (d)	9	8 58 24.38	21 39 39.7			
	Mars - - -	S.	8 59 10.87	21 37 33.2	0.45	6.3	133
23	γ Cancri - -	5	8 33 51.91	22 3 2.2			
	* - - - (b)	7.8	8 49 34.96	21 47 40.4			
	Mars - - -	N.	8 57 57.00	21 40 53.0	0.45	6.2	134

OPPOSITION OF MARS, 1837. 477

EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
FEBRUARY 5, 1837.

Date.	Star.	Magnitude.	Apparent Place.		Semidiameter for		Hor. Par.
			Right Ascension.	Declination North.	R. A.	Dec.	
1837			^h ^m ^s	[°] ['] ["]	^s	["]	["]
Feb. 24	γ Cancri - -	5	8 33 51·91	22 3 2·2			
	* - - - (b)	7.8	8 49 34·97	21 47 40·4			
	Mars - - -	S.	8 56 45·71	21 43 56·4	0·44	6·2	12·0
25	γ Cancri - -	5	8 33 51·90	22 3 2·3			
	* - - - (b)	7.8	8 49 34·99	21 47 40·5			
	Mars - - -	N.	8 55 37·11	21 46 43·5	0·44	6·2	11·9
26	γ Cancri - -	5	8 33 51·90	22 3 2·3			
	* - - - (b)	7.8	8 49 35·00	21 47 40·6			
	Mars - - -	S.	8 54 31·26	21 49 14·4	0·44	6·1	11·8
27	γ Cancri - -	5	8 33 51·89	22 3 2·4			
	* - - - (b)	7.8	8 49 35·02	21 47 40·6			
	Mars - - -	N.	8 53 28·25	21 51 29·3	0·44	6·1	11·8
28	γ Cancri - -	5	8 33 51·88	22 3 2·4			
	* - - - (a)	8	8 48 3·74	21 58 21·0			
	Mars - - -	S.	8 52 28·15	21 53 28·2	0·43	6·0	11·7
Mar. 1	γ Cancri - -	5	8 33 51·88	22 3 2·5			
	* - - - (a)	8	8 48 3·73	21 58 21·1			
	Mars - - -	N.	8 51 31·05	21 55 11·2	0·43	6·0	11·6
2	γ Cancri - -	5	8 33 51·87	22 3 2·5			
	* - - - (a)	8	8 48 3·73	21 58 21·1			
	Mars - - -	S.	8 50 36·97	21 56 38·3	0·43	6·0	11·5
3	γ Cancri - -	5	8 33 51·87	22 3 2·6			
	* - - - (a)	8	8 48 3·72	21 58 21·2			
	Mars - - -	N.	8 49 46·01	21 57 50·0	0·43	5·9	11·4
4	γ Cancri - -	5	8 33 51·86				
	* - - - (a)	8	8 48				
	Mars - - -	S.	8 48		42	5·9	11·4
5	γ Cancri - -	5	8 33				
	* - - - (a)	8	8				
	Mars - - -	N.	8		2	5·8	11·3
6	γ Cancri - -	5					
	Mars - - -	S.			2	5·8	
	* - - - (a)	8					

478 OPPOSITION OF MARS, 1837.

EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
FEBRUARY 5, 1837.

Date.	Star.	Magnitude.	Apparent Place.		Semidiameter for		Ha. Pa.
			Right Ascension.	Declination North.	R. A.	Dec.	
1837			h m s	° ' "	"	"	"
Mar. 7	γ Cancri - -	5	8 33 51.84	22 3 2.8			
	Mars - - -	N.	8 46 53.88	22 0 6.8	0.41	5.8	11.5
	* - - - (a)	8	8 48 3.70	21 58 21.4			
8	γ Cancri - -	5	8 33 51.83	22 3 2.8			
	Mars - - -	S.	8 46 18.94	22 0 4.8	0.41	5.7	11.5
	* - - - (a)	8	8 48 3.69	21 58 21.5			
9	γ Cancri - -	5	8 33 51.82	22 3 2.9			
	Mars - - -	N.	8 45 47.26	21 59 48.7	0.41	5.7	10.5
	* - - - (a)	8	8 48 3.68	21 58 21.5			
10	γ Cancri - -	5	8 33 51.81	22 3 2.9			
	Mars - - -	S.	8 45 18.84	21 59 18.5	0.40	5.6	10.5
	* - - - (a)	8	8 48 3.67	21 58 21.6			
11	γ Cancri - -	5	8 33 51.80	22 3 3.0			
	Mars - - -	N.	8 44 53.68	21 58 34.7	0.40	5.6	10.5
	* - - - (a)	8	8 48 3.66	21 58 21.6			
12	γ Cancri - -	5	8 33 51.79	22 3 3.1			
	Mars - - -	S.	8 44 31.76	21 57 37.5	0.40	5.5	10.5
	* - - - (a)	8	8 48 3.66	21 58 21.7			
13	γ Cancri - -	5	8 33 51.78	22 3 3.1			
	Mars - - -	N.	8 44 13.06	21 56 27.4	0.39	5.5	10.5
	* - - - (a)	8	8 48 3.65	21 58 21.8			
14	γ Cancri - -	5	8 33 51.77	22 3 3.2			
	Mars - - -	S.	8 43 57.57	21 55 4.6	0.39	5.4	10.5
	* - - - (a)	8	8 48 3.64	21 58 21.9			
15	γ Cancri - -	5	8 33 51.76	22 3 3.2			
	Mars - - -	N.	8 43 45.27	21 53 29.7	0.39	5.4	10.5
	* - - - (b)	7.8	8 49 34.84	21 47 41.5			
16	γ Cancri - -	5	8 33 51.75	22 3 3.3			
	Mars - - -	S.	8 43 36.10	21 51 42.7	0.38	5.3	10.5
	* - - - (b)	7.8	8 49 34.83	21 47 41.5			
17	γ Cancri - -	5	8 33 51.74	22 3 3.4			
	Mars - - -	N.	8 43 30.04	21 49 44.0	0.38	5.3	10.5
	* - - - (b)	7.8	8 49 34.82	21 47 41.6			

OPPOSITION OF MARS, 1837. 479

HEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
FEBRUARY 5, 1837.

	Star.	Magnitude.	Apparent Place.		Semidiameter for		Hor. Par.
			Right Ascension.	Declination North.	R. A.	Dec.	
			h m s	° ' "	"	"	"
18	γ Cancri - -	5	8 33 51.73	22 3 3.4			
	Mars - - -	S.	8 43 27.03	21 47 33.8	0.37	5.2	10.2
	* - - - (b)	7.8	8 49 34.81	21 47 41.6			
19	γ Cancri - -	5	8 33 51.72	22 3 3.5			
	Mars - - -	N.	8 43 27.04	21 45 12.5	0.37	5.2	10.1
	* - - - (b)	7.8	8 49 34.80	21 47 41.7			
20	γ Cancri - -	5	8 33 51.70	22 3 3.5			
	Mars - - -	S.	8 43 30.03	21 42 40.2	0.37	5.1	10.0
	* - - - (c)	9	8 52 56.82	21 37 39.0			
21	γ Cancri - -	5	8 33 51.69	22 3 3.6			
	Mars - - -	N.	8 43 35.96	21 39 57.0	0.36	5.1	9.9
	* - - - (c)	9	8 52 56.81	21 37 39.1			

MEAN TIME OF HIGH WATER AT LONDON BRIDGE,

Reckoning from Noon of each Day.

Day of the Month.	JANUARY.				FEBRUARY.				MARCH.				APRIL.				MAY.				JUN.	
	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m		
1	8	29	20	58	10	1	22	49	8	10	20	56	11	17	23	56	—	12	4	0	46	
2	9	27	22	0	11	32	—	—	9	46	22	38	—	12	26	—	0	30	12	54	1	28
3	10	39	23	17	0	10	12	44	11	23	—	—	0	52	13	18	1	16	13	35	2	10
4	11	50	—	—	1	14	13	43	0	3	12	38	1	42	14	3	1	53	14	11	2	48
5	0	21	12	52	2	10	14	34	1	6	13	33	2	22	14	41	2	29	14	48	3	23
6	1	22	13	52	2	58	15	22	1	58	14	21	3	0	15	17	3	6	15	25	3	58
7	2	20	14	45	3	45	16	6	2	44	15	6	3	34	15	51	3	43	16	1	4	36
8	3	9	15	33	4	27	16	48	3	27	15	46	4	8	16	25	4	18	16	34	5	14
9	3	58	16	24	5	8	17	26	4	5	16	23	4	41	16	56	4	51	17	11	5	57
10	4	50	17	14	5	44	18	2	4	41	16	57	5	13	17	33	5	33	17	56	6	44
11	5	38	18	0	6	20	18	38	5	12	17	28	5	55	18	17	6	19	18	42	7	34
12	6	21	18	43	6	57	19	19	5	44	18	2	6	40	19	8	7	7	19	37	8	29
13	7	5	19	24	7	45	20	17	6	23	18	45	7	43	20	23	8	17	20	55	9	27
14	7	45	20	8	8	56	21	38	7	9	19	39	9	3	21	44	9	31	22	5	10	30
15	8	37	21	11	10	21	23	4	8	18	21	2	10	24	23	1	10	38	23	10	11	26
16	9	50	22	32	11	46	—	—	9	47	22	31	11	35	—	—	11	38	—	—	—	—
17	11	12	23	49	0	22	12	49	11	15	23	50	0	4	12	30	0	2	12	23	0	45
18	—	12	20	—	1	12	13	33	—	12	19	—	0	54	13	14	0	42	13	0	1	37
19	0	46	13	9	1	54	14	13	0	44	13	7	1	30	13	45	1	19	13	39	2	29
20	1	31	13	53	2	31	14	47	1	29	13	49	2	1	14	17	2	0	14	21	3	18
21	2	13	14	31	3	3	15	18	2	5	14	20	2	33	14	50	2	42	15	4	4	6
22	2	49	15	6	3	33	15	48	2	36	14	51	3	6	15	23	3	26	15	48	4	57
23	3	22	15	38	4	4	16	20	3	6	15	21	3	42	16	1	4	11	16	35	5	50
24	3	54	16	10	4	35	16	50	3	36	15	51	4	21	16	42	4	59	17	24	6	44
25	4	27	16	44	5	6	17	22	4	7	16	24	5	4	17	27	5	52	18	23	7	38
26	5	2	17	20	5	38	17	54	4	41	16	58	5	54	18	23	6	55	19	29	8	33
27	5	38	17	56	6	15	18	40	5	16	17	37	6	54	19	28	8	5	20	41	9	33
28	6	13	18	31	7	6	19	34	6	1	18	27	8	8	20	58	9	18	21	54	10	42
29	6	50	19	9	-	-	-	-	6	55	19	27	9	43	22	24	10	28	23	1	11	50
30	7	32	20	0	-	-	-	-	8	10	21	3	11	2	23	35	11	31	23	58	0	22
31	8	34	21	16	-	-	-	-	9	-	-	-	-	-	-	-	—	12	23	-	-	-

If the time of High Water be

1. For the Morning Tide:—
take the time opposite thereto
12 hours.

2. For the Afternoon Tide:—
from the 1st column of the month

in the civil mode of reckoni
ing the given

MEAN TIME OF HIGH WATER AT LONDON BRIDGE,

Reckoning from Noon of each Day.

	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	h	m	h	m	h	m	h	m	h	m	h	m
1	11	13	2	23	3	10	15	3	38	15	4	14
2	1	55	3	0	3	37	15	3	31	15	5	0
3	2	36	3	31	4	3	16	3	59	16	5	51
4	3	11	4	1	4	31	16	4	33	16	6	54
5	3	46	4	33	5	0	17	5	12	17	8	0
6	4	21	5	5	5	33	17	6	1	18	9	7
7	4	57	5	37	6	16	18	7	0	19	10	16
8	5	34	6	9	7	6	19	8	23	21	11	19
9	6	11	6	45	8	27	21	9	58	22	—	12
10	6	50	7	33	10	7	22	11	28	23	0	41
11	7	31	8	43	11	36	—	—	12	25	1	29
12	8	19	10	15	0	11	12	0	51	13	2	11
13	9	22	11	42	1	9	13	1	38	13	2	51
14	10	39	0	18	1	59	14	2	18	14	3	30
15	11	51	1	18	2	44	15	2	54	15	4	6
16	0	25	2	13	3	22	15	3	28	15	4	43
17	1	28	3	3	3	57	16	4	3	16	5	22
18	2	24	3	47	4	32	16	4	41	17	6	4
19	3	12	4	27	5	8	17	5	20	17	6	50
20	4	0	5	6	5	46	18	6	3	18	7	37
21	4	48	5	43	6	31	18	6	56	19	8	25
22	5	35	6	20	7	29	20	8	10	20	9	20
23	6	17	7	3	8	54	21	9	39	22	10	28
24	6	57	8	0	10	27	23	10	56	23	11	28
25	7	41	9	25	11	41	—	11	58	—	—	12
26	8	37	10	57	0	11	12	0	23	12	0	54
27	9	57	—	12	0	58	13	0	59	13	1	45
28	11	22	0	39	1	36	13	1	32	13	2	33
29	—	12	1	23	2	9	14	1	58	14	3	20
30	0	54	2	2	2	38	14	2	29	14	4	8
31	1	42	2	39	—	—	—	3	2	15	4	58

*Example:—*Required the Mean Time of High Water, at London Bridge, for the Morning and Afternoon of Jan. 23, 1837.

1. Opposite the day *preceding*, viz. 22, and in the 2nd column, under JANUARY, is 15^h 6^m, which, being diminished by 12^h, gives 3^h 6^m for the Time of High Water in the Morning.

2. Opposite the given date, and in the 1st column, under JANUARY, is 3^h 22^m, which is the Time of High Water in the Afternoon.

TIME OF HIGH WATER, ON THE FULL AND CHANGE OF THE MOON
AT THE UNDERMENTIONED PORTS AND PLACES.

PLACE.	SITUATION.	Time of High Water.	PLACE.	SITUATION.	Time of High Water.
		h m			h m
Aberdeen - -	Scotland - -	0 45	Chatham - - -	England - -	0
Aberdovy - -	Wales - - -	7 30	Cherbourg - -	France - - -	7
Aberystwith -	Wales - - -	7 30	Chester Bar - -	England - -	10
Achill Head -	Ireland - - -	6 0	Chichester Harbour	England - -	11
Agnes (St.) -	Scilly Isles -	4 10	Christchurch Harbour	England - -	8
Air Point - -	Isle of Man -	10 30	Clear Cape - -	Ireland - - -	4
Aldborough -	England - - -	10 45	Cork Harbour - -	Ireland - - -	4
Alderney Pier	English Channel	6 45	Cornwall Cape -	England - - -	4
Alne River - -	England - - -	2 45	Cowes - - - -	Isle of Wight	10
Amlwick Port	Anglesea - -	10 30	Cromartie - - -	Scotland - -	11
Antwerp - - -	Netherlands -	4 25	Cuckold's Point -	River Thames	1
Arran Isle - -	Scotland - - -	11 15	Cuxhaven - - -	Germany - -	1
Arundel Bar -	England - - -	11 15	Dartmouth Harbour	England - -	6
Balta - - - -	Shetland - - -	3 0	Deal - - - - -	England - - -	11
Baltimore - -	Ireland - - -	3 45	Dee (River) - -	Scotland - -	0
Banff - - - -	Scotland - - -	11 30	Dingle Bay - - -	Ireland - - -	3
Bantry Bay -	Ireland - - -	3 46	Donaghadee Pier	Ireland - - -	9
Barmouth - -	Wales - - - -	7 55	Donegal Bar - -	Ireland - - -	5
Barnstaple Bar	England - - -	5 30	Douglas's Harbour	Isle of Man -	10
Beachy (on Shore)	England - - -	10 15	Dover Pier - - -	England - - -	11
Beachy (Offing)	England - - -	11 0	Downing's Bay }	Ireland - -	5
Beaumaris - -	Wales - - - -	10 15	Sheephaven }		
Belfast - - -	Ireland - - -	10 5	Downs - - - -	England - - -	11
Berwick - - -	England - - -	2 18	Dublin Bar - - -	Ireland - - -	10
Blakeney Harbour	England - - -	6 50	Dudgeon Lights -	North Sea - -	7
Blythe - - - -	England - - -	2 45	Dunbar - - - -	Scotland - -	2
Bolt Head - -	England - - -	5 55	Duncansby Head	Scotland - -	10
Boston - - - -	England - - -	7 15	Dundalk Bay - -	Ireland - - -	10
Boulogne - - -	France - - - -	10 50	Dundee - - - -	Scotland - -	2
Brassa Sound -	Shetland - - -	10 0	Dungarvon - - -	Ireland - - -	4
Bree Bank - -	North Sea - -	3 30	Dungeness - - -	England - - -	10
Brest Harbour -	France - - - -	3 48	Dunkirk - - - -	France - - - -	11
Bridgewater -	England - - -	6 45	Eddystone - - -	English Chan.	5
Bridlington -	England - - -	4 30	Exmouth Bar - -	England - - -	6
Bridport - - -	England - - -	6 0	Eyemouth - - -	Scotland - -	2
Brighton - - -	England - - -	10 5	Falmouth - - -	England - - -	5
Brielle - - - -	Netherlands -	3 0	Flamboro' Head -	England - - -	4
Bristol - - - -	England - - -	6 45	Flatholm - - -	England - - -	6
Brouwershaven	Netherlands -	2 0	Flats (Kentish) -	England - - -	11
Buchan Ness -	Scotland - - -	12 0	Flushing - - -	Netherlands -	1
Burnt Island -	Scotland - - -	2 30	Foreland (North)	England - - -	11
Cairston - - -	Orkneys - - -	9 0	Foreland (South)	England - - -	11
Calais - - - -	France - - - -	11 30	Fowey - - - - -	England - - -	5
Caldy Island -	England - - -	6 0	Galloper - - - -	River Thames	0
Calf of Man -	England - - -	10 30	Galloway (Mull)	Scotland - -	11
Cancale Bay -	France - - - -	0	Galway Bay - - -	Ireland - - -	4
Cantire (Mull)	France - - - -	0	Galway Bay (West Gat.)	Holland - - -	1
Cardigan Bar -	Wales - - - -	0	Downs - - - -	France - - - -	1
Caermarthen Bar	Wales - - - -	0	Downs - - - -	France - - - -	1
Carnarvon Bar	Wales - - - -	0	Downs - - - -	France - - - -	1

TIME OF HIGH WATER, ON THE FULL AND CHANGE OF THE MOON,
AT THE UNDERMENTIONED PORTS AND PLACES.

PLACE.	SITUATION.	Time of High Water.	PLACE.	SITUATION.	Time of High Water.
		h m			h m
resend - -	England - -	1 30	Plymouth Dock Yard	England - -	5 33
mock - -	W. C. of Scotland	11 45	Portland Race - -	England - -	9 15
rnsey Pier -	English Channel	6 30	Portland Road - -	England - -	6 15
fleet - -	River Thames	12 0	Port Patrick - -	Scotland - -	11 0
lepool - -	England - -	3 45	Portsmouth Dock Yd.	England - -	11 40
wich - -	England - -	11 30	Rathlin I., Church Bay	N. C. of Irel.	9 0
tings - -	England - -	10 36	Ramsgate Harbour	England - -	11 46
re de Grace	France - -	10 30	Rye Harbour - -	England - -	10 40
n's (St.) -	England - -	11 0	Saltees - - - -	Ireland - -	5 40
goland - -	German Ocean	11 0	Scarborough - -	England - -	4 25
voetsluis -	Holland - -	2 0	Scilly Islands - -	England - -	4 10
head Bay -	Wales - -	10 0	Seaford - - -	England - -	10 15
n Point - -	Jutland - -	12 0	Selsea Harbour -	England - -	11 15
th Harbour	Ireland - -	11 8	Shannon Mouth -	Ireland - -	3 45
- - -	England - -	6 0	Sheerness Dock Yard	England - -	0 39
iber River -	England - -	5 30	Shields - - - -	England - -	3 0
ich - -	England - -	12 0	Skerries - - - -	Ireland - -	4 45
de Bas - -	France - -	3 17	Sligo Bay - - -	Ireland - -	6 45
ey (St. Aubin's)	English Channel	6 10	Solebay - - - -	England - -	10 30
mare River	Ireland - -	3 30	Southampton - -	England - -	11 40
tish Knock -	River Thames	11 30	Spithead - - -	England - -	9 30
g's Road - -	Bristol Channel	6 45	Spurn Point - -	England - -	5 20
ale Harbour	Ireland - -	4 30	St. Ives - - - -	England - -	4 30
acudbright -	Scotland - -	11 15	St. Malo - - - -	France - -	6 0
d's End - -	England - -	4 30	Stromness - - -	Orkneys - -	10 30
h Pier - -	Scotland - -	2 20	Sunderland - -	England - -	3 0
wick Harbour	Shetland - -	9 45	Swansea Bay - -	Wales - -	5 56
is Islands -	Scotland - -	6 0	Swin - - - -	River Thames	12 0
rpool Dock	England - -	11 22	Tay Bar - - - -	Scotland - -	1 45
don Bridge -	River Thames	2 7	Tees River - - -	England - -	3 30
gh Carlingford	Ireland - -	11 0	Terschelling West	Holland - -	8 40
gate Pier -	England - -	11 15	Texel, Heder Road	Holland - -	9 0
ord Haven Ent.	Wales - -	5 45	E. Stream - - -		
trose - - -	Scotland - -	1 45	Torbay - - - -	England - -	6 0
laix - - -	N. C. of France	5 15	Tralee Bay - - -	Ireland - -	3 45
nt's Bay - -	England - -	4 40	Tynemouth Bar -	England - -	2 50
lles Point -	Isle of Wight	9 45	Waterford Harbour	Ireland - -	5 50
castle - -	England - -	4 0	Wexford Harbour -	Ireland - -	7 30
port - - -	Wales - - -	6 45	Weymouth - - -	England - -	6 30
port - - -	France - - -	11 15	Whitby - - - -	England - -	3 45
e Light - -	River Thames	1 9	Wicklow - - - -	Ireland - -	9 0
rdness - -	England - -	10 40	Wisbeach - - -	England - -	7 30
ney Isles -	Scotland - -	10 30	Wranger Oog - -	E. Friesland	12 0
nd - - -	Flanders - -	0 10	Yarmouth Roads -	England - -	8 40
broke Dock Yd.	Wales - - -	6 4	Yarmouth Sands -	England - -	10 30
land Frith -	Scotland - -	10 30	Yorkshire Coast -	England - -	6 0
ance - - -	England - -	4 30	Youghall - - -	Ireland - -	5 0

TABLE,

SHOWING THE CORRECTION REQUIRED ON ACCOUNT OF
SECOND DIFFERENCES,

In finding the Greenwich Time corresponding to a reduced Lunar Distance

Arguments:—Approximate Interval and Difference of Proportional Logarithms

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris																			
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11
1 10	1 50	1	1	2	3	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12
		Difference of the Proportional Logarithms in the Ephemeris																			
		46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	3	3	3	3	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6
0 20	2 40	6	6	6	6	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10
0 30	2 30	8	8	9	9	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14
0 40	2 20	10	10	11	11	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18
0 50	2 10	12	12	13	13	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21
1 0	2 0	13	13	14	14	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23
1 10	1 50	14	14	15	15	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25
1 20	1 40	14	15	16	16	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26
1 30	1 30	14	15	16	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	26

Correction from this Table is to be *added* to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are *decreasing*, and *subtracted* when they are *increasing*.

TABLES FOR DETERMINING THE LATITUDE BY OBSERVATIONS
OF THE POLE STAR OUT OF THE MERIDIAN.

TABLE I.
Containing the *First* Correction.
Argument:—Sidereal Time of Observation.

Sidereal Time.	Correction.	Sidereal Time.	Sidereal Time.	Correction.	Sidereal Time.
^h ^m	[°] ['] ["]	^h ^m	^h ^m	[°] ['] ["]	^h ^m
0 0	— 1 29 44 +	12 0	6 0	— 0 24 48 +	18 0
10	1 30 44	10	10	0 20 52	10
20	1 31 33	20	20	0 16 53	20
30	1 32 12	30	30	0 12 53	30
40	1 32 41	40	40	0 8 51	40
50	1 32 59	50	50	0 4 47	50
1 0	1 33 6	13 0	7 0	— 0 0 44 +	19 0
10	1 33 2	10	10	+ 0 3 20 —	10
20	1 32 48	20	20	0 7 23	20
30	1 32 24	30	30	0 11 26	30
40	1 31 49	40	40	0 15 27	40
50	1 31 3	50	50	0 19 26	50
2 0	1 30 7	14 0	8 0	0 23 23	20 0
10	1 29 1	10	10	0 27 18	10
20	1 27 44	20	20	0 31 9	20
30	1 26 17	30	30	0 34 57	30
40	1 24 41	40	40	0 38 41	40
50	1 22 55	50	50	0 42 20	50
3 0	1 20 59	15 0	9 0	0 45 55	21 0
10	1 18 55	10	10	0 49 24	10
20	1 16 41	20	20	0 52 48	20
30	1 14 18	30	30	0 56 6	30
40	1 11 47	40	40	0 59 17	40
50	1 9 9	50	50	1 2 21	50
4 0	1 6 21	16 0	10 0	1 5 19	22 0
10	1 3 26	10	10	1 8 9	10
20	1 0 24	20	20	1 10 51	20
30	0 57 15	30	30	1 13 25	30
40	0 54 0	40	40	1 15 51	40
50	0 50 38	50	50	1 18 8	50
5 0	0 47 11	17 0	11 0	1 20 15	23 0
10	0 43 38	10	10	1 22 14	10
20	0 40 0	20	20	1 24 4	20
30	0 36 18	30	30	1 25 44	30
40	0 32 32	40	40	1 27 14	40
50	0 28 42	50	50	1 28 34	50
6 0	— 0 24 48 +	18 0	12 0	+ 1 29 44 —	24 0

TABLE II.

Containing the *Second* Correction, (*always to be added.*)*Arguments*:—Sidereal Time and Approximate Latitude.

Sidereal Time.	Approximate Latitude.								Sidereal Time.
	0°	5°	10°	15°	20°	25°	30°	35°	
^h ^m	['] ["]	['] ["]	['] ["]	['] ["]	['] ["]	['] ["]	['] ["]	['] ["]	^h ^m
0 0	0 0	0 0	0 1	0 1	0 2	0 3	0 3	0 4	12 0
30	0 0	0 0	0 0	0 0	0 1	0 1	0 1	0 1	30
1 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	13 0
30	0 0	0 0	0 0	0 0	0 0	0 1	0 1	0 1	30
2 0	0 0	0 0	0 1	0 1	0 2	0 2	0 3	0 3	14 0
30	0 0	0 1	0 2	0 3	0 4	0 5	0 6	0 7	30
3 0	0 0	0 2	0 3	0 5	0 7	0 9	0 11	0 13	15 0
30	0 0	0 2	0 5	0 7	0 10	0 12	0 16	0 19	30
4 0	0 0	0 3	0 7	0 10	0 14	0 17	0 21	0 26	16 0
30	0 0	0 4	0 8	0 13	0 17	0 22	0 27	0 33	30
5 0	0 0	0 5	0 10	0 15	0 20	0 26	0 32	0 39	17 0
30	0 0	0 6	0 11	0 17	0 23	0 30	0 37	0 45	30
6 0	0 0	0 6	0 12	0 19	0 26	0 33	0 41	0 49	18 0
30	0 0	0 6	0 13	0 20	0 27	0 35	0 43	0 51	30
7 0	0 0	0 7	0 13	0 20	0 28	0 35	0 44	0 53	19 0
30	0 0	0 7	0 13	0 20	0 27	0 35	0 43	0 52	30
8 0	0 0	0 6	0 12	0 19	0 26	0 33	0 41	0 50	20 0
30	0 0	0 6	0 11	0 17	0 24	0 30	0 38	0 45	30
9 0	0 0	0 5	0 10	0 15	0 21	0 27	0 33	0 40	21 0
30	0 0	0 4	0 8	0 13	0 18	0 22	0 28	0 34	30
10 0	0 0	0 3	0 7	0 10	0 14	0 18	0 22	0 27	22 0
30	0 0	0 3	0 5	0 8	0 10	0 13	0 17	0 20	30
11 0	0 0	0 2	0 3	0 5	0 7	0 9	0 11	0 14	23 0
30	0 0	0 1	0 2	0 3	0 4	0 5	0 7	0 8	30
12 0	0 0	0 0	0 1	0 1	0 2	0 3	0 3	0 4	24 0

TABLE III. (*for 1837.*)- Containing the *Third* Correction, (*always to be added.*)*Arguments*:—Sidereal Time and Date.

Sidereal Time.	Jan. 1.	Feb. 1.	March 1.	April 1.	May 1.	June 1.	July
^h	['] ["]	['] ["]	['] ["]	['] ["]	['] ["]	['] ["]	['] ["]
0	0 44	0 41	0 34	0 25	0 17	0 14	0 1
2	0 53	0 55	0 52	0 44	0 35	0 27	0 2
4	1 3	1 10	1 11	1 7	0 59	0 50	0 4
6	1 13	1 22	1 28	1 29	1 24	1 15	1
8	1 19	1 29	1 37	1 42	1 42	1 37	1 5
10	1 20	1 27	1 36	1 45	1 49	1 48	1 4
12	1 16	1 19	1 26	1 35	1 43	1 46	1 1
14	1 7	1 5	1 8	1 16	1 25	1 33	
16	0 57	0 50	0 49	0 53	1 1	1 10	
18	0 47	0 38	0 32	0 31	0 36	0 45	
20	0 41	0 31	0 23	0 18	0 18	0 23	
22	0 40	0 33	0 24	0 15	0 11	0 12	
24	0 44	0 41	0 34	0 25	0 17	0 14	

TABLE II.

Containing the *Second Correction*, (*always to be added.*)*Arguments* :—Sidereal Time and Approximate Latitude.

Sidereal		Approximate Latitude.									Sidereal		
Time.		35°	40°	45°	50°	55°	60°	65°	70°	Time.			
h	m	'	"	'	"	'	"	'	"	'	"	h	m
0	0	0 4	0 5	0 5	0 6	0 8	0 9	0 12	0 15	12	0		
	30	0 1	0 1	0 1	0 2	0 2	0 3	0 3	0 4			30	
1	0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	13	0		
	30	0 1	0 1	0 1	0 1	0 2	0 2	0 2	0 3			30	
2	0	0 3	0 4	0 5	0 6	0 7	0 8	0 10	0 13	14	0		
	30	0 7	0 9	0 11	0 13	0 15	0 18	0 23	0 29			30	
3	0	0 13	0 15	0 18	0 22	0 26	0 32	0 39	0 51	15	0		
	30	0 19	0 23	0 27	0 33	0 39	0 48	0 59	1 15			30	
4	0	0 26	0 31	0 37	0 44	0 53	1 4	1 20	1 42	16	0		
	30	0 33	0 39	0 47	0 56	1 7	1 21	1 41	2 9			30	
5	0	0 39	0 47	0 56	1 7	1 20	1 37	2 1	2 34	17	0		
	30	0 45	0 54	1 4	1 16	1 32	1 51	2 17	2 56			30	
6	0	0 49	0 59	1 10	1 24	1 40	2 2	2 31	3 13	18	0		
	30	0 51	1 2	1 14	1 28	1 46	2 9	2 39	3 24			30	
7	0	0 53	1 3	1 16	1 30	1 48	2 11	2 42	3 28	19	0		
	30	0 52	1 3	1 14	1 29	1 46	2 9	2 40	3 25			30	
8	0	0 50	0 59	1 11	1 24	1 41	2 3	2 32	3 15	20	0		
	30	0 45	0 55	1 5	1 17	1 33	1 53	2 19	2 59			30	
9	0	0 40	0 48	0 57	1 8	1 22	1 40	2 3	2 37	21	0		
	30	0 34	0 40	0 48	0 57	1 9	1 23	1 43	2 12			30	
10	0	0 27	0 32	0 38	0 46	0 55	1 7	1 22	1 46	22	0		
	30	0 20	0 24	0 29	0 34	0 41	0 50	1 1	1 19			30	
11	0	0 14	0 16	0 19	0 23	0 28	0 34	0 42	0 53	23	0		
	30	0 8	0 10	0 12	0 14	0 16	0 20	0 25	0 32			30	
12	0	0 4	0 5	0 5	0 6	0 8	0 9	0 12	0 15	24	0		

TABLE III. (*for 1837.*)Containing the *Third Correction*, (*always to be added.*)*Arguments* :—Sidereal Time and Date.

Sidereal Time	July 1.	Aug. 1.	Sept. 1.	Oct. 1.	Nov. 1.	Dec. 1.	Dec. 31.
h	' "	' "	' "	' "	' "	' "	' "
0	0 15	0 22	0 32	0 44	0 55	1 3	1 7
2	0 24	0 26	0	0 42	0 54	1 4	1 12
4	0 43	0 39	0	0 45	0 54	1 4	1 14
6	1 6	0 58	0	52	0 56	1 3	1 13
8	1 28	1 17	1	1	0 59	1 1	1 8
10	1 42	1 32	1	10	1 2	0 59	1 1
12	1 45	1 38	1	16	1 5	0 57	0 53
14	1 36			18	1 6	0 56	0 48
16	1 17			15	1 6	0 56	0 46
18	0 1			8	1 4	0 57	0 47
20	0 1			19	1 1	0 59	0 52
22	0				0 58	1 1	0 59
24	0				0 55	1 3	1 7

TABLE

For converting INTERVALS of MEAN SOLAR Time into Equivalent INTERVALS of SIDEREAL Time.

HOURS.				MINUTES.				SECONDS.						
Hours of Mean Time.	Equivalents in Sidereal Time.			Minutes of Mean Time.	Equivalents in Sidereal Time.		Minutes of Mean Time.	Equivalents in Sidereal Time.		Seconds of Mean Time.	Equivalents in Sidereal Time.		Seconds of Mean Time.	Equivalents in Sidereal Time.
	h	m	s		m	s		m	s		s		s	
1	1	0	9.8565	1	1	0.1643	31	31	5.0925	1	1.0027	31	31	0.0000
2	2	0	19.7130	2	2	0.3286	32	32	5.2568	2	2.0055	32	32	0.0000
3	3	0	29.5694	3	3	0.4928	33	33	5.4211	3	3.0082	33	33	0.0000
4	4	0	39.4259	4	4	0.6571	34	34	5.5853	4	4.0110	34	34	0.0000
5	5	0	49.2824	5	5	0.8214	35	35	5.7496	5	5.0137	35	35	0.0000
6	6	0	59.1388	6	6	0.9857	36	36	5.9139	6	6.0164	36	36	0.0000
7	7	1	8.9953	7	7	1.1499	37	37	6.0782	7	7.0192	37	37	1.0000
8	8	1	18.8518	8	8	1.3142	38	38	6.2424	8	8.0219	38	38	1.0000
9	9	1	28.7083	9	9	1.4785	39	39	6.4067	9	9.0246	39	39	1.0000
10	10	1	38.5647	10	10	1.6428	40	40	6.5710	10	10.0274	40	40	1.0000
11	11	1	48.4212	11	11	1.8070	41	41	6.7353	11	11.0301	41	41	1.0000
12	12	1	58.2777	12	12	1.9713	42	42	6.8995	12	12.0329	42	42	1.0000
13	13	2	8.1342	13	13	2.1356	43	43	7.0638	13	13.0356	43	43	1.0000
14	14	2	17.9906	14	14	2.2998	44	44	7.2281	14	14.0383	44	44	1.0000
15	15	2	27.8471	15	15	2.4641	45	45	7.3924	15	15.0411	45	45	1.0000
16	16	2	37.7036	16	16	2.6284	46	46	7.5566	16	16.0438	46	46	1.0000
17	17	2	47.5600	17	17	2.7927	47	47	7.7209	17	17.0465	47	47	1.0000
18	18	2	57.4165	18	18	2.9569	48	48	7.8852	18	18.0493	48	48	1.0000
19	19	3	7.2730	19	19	3.1212	49	49	8.0495	19	19.0520	49	49	1.0000
20	20	3	17.1295	20	20	3.2855	50	50	8.2137	20	20.0548	50	50	1.0000
21	21	3	26.9859	21	21	3.4498	51	51	8.3780	21	21.0575	51	51	1.0000
22	22	3	36.8424	22	22	3.6140	52	52	8.5423	22	22.0602	52	52	1.0000
23	23	3	46.6989	23	23	3.7783	53	53	8.7066	23	23.0630	53	53	1.0000
24	24	3	56.5554	24	24	3.9426	54	54	8.8708	24	24.0657	54	54	1.0000
				25	25	4.1069	55	55	9.0351	25	25.0685	55	55	1.0000
				26	26	4.2711	56	56	9.1994	26	26.0712	56	56	1.0000
				27	27	4.4354	57	57	9.3637	27	27.0739	57	57	1.0000
				28	28	4.5997	58	58	9.5279	28	28.0767	58	58	1.0000
				29	29	4.7640	59	59	9.6922	29	29.0794	59	59	1.0000
				30	30	4.9282	60	60	9.8565	30	30.0821	60	60	1.0000

TABLE

For converting INTERVALS of MEAN SOLAR Time into Equivalent INTERVALS of SIDEREAL Time.

FRACTIONS OF SECONDS.

Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.
0.01	0.01003	0.34	0.34093	0.67	0.67183
0.02	0.02006	0.35	0.35096	0.68	0.68186
0.03	0.03008	0.36	0.36099	0.69	0.69189
0.04	0.04011	0.37	0.37101	0.70	0.70192
0.05	0.05014	0.38	0.38104	0.71	0.71194
0.06	0.06016	0.39	0.39107	0.72	0.72197
0.07	0.07019	0.40	0.40110	0.73	0.73200
0.08	0.08022	0.41	0.41112	0.74	0.74203
0.09	0.09025	0.42	0.42115	0.75	0.75205
0.10	0.10027	0.43	0.43118	0.76	0.76208
0.11	0.11030	0.44	0.44120	0.77	0.77211
0.12	0.12033	0.45	0.45123	0.78	0.78214
0.13	0.13036	0.46	0.46126	0.79	0.79216
0.14	0.14038	0.47	0.47129	0.80	0.80219
0.15	0.15041	0.48	0.48131	0.81	0.81222
0.16	0.16044	0.49	0.49134	0.82	0.82225
0.17	0.17047	0.50	0.50137	0.83	0.83227
0.18	0.18049	0.51	0.51140	0.84	0.84230
0.19	0.19052	0.52	0.52142	0.85	0.85233
0.20	0.20055	0.53	0.53145	0.86	0.86235
0.21	0.21057	0.54	0.54148	0.87	0.87238
0.22	0.22060	0.55	0.55151	0.88	0.88241
0.23	0.23063	0.56	0.56153	0.89	0.89244
0.24	0.24066	0.57	0.57156	0.90	0.90246
0.25	0.25068	0.58	0.58159	0.91	0.91249
0.26	0.26071	0.59	0.59161	0.92	0.92252
0.27	0.27074	0.60	0.60164	0.93	0.93255
0.28	0.28077	0.61	0.61167	0.94	0.94257
0.29	0.29080	0.62	0.62170	0.95	0.95260
0.30	0.30083	0.63	0.63173	0.96	0.96263
0.31	0.31086	0.64	0.64176		0.97266
0.32	0.32089	0.65	0.65179		0.98268
0.33	0.33092	0.66	0.66182		0.99271

This TABLE is useful for the conversion of MEAN SOLAR Time into SIDEREAL Time.
 Sidereal Time required = Sidereal Time at the preceding Mean Noon + the Equivalent to the given Mean Time.
 EXAMPLE.—To convert 2^h 22^m 25^s.62 Mean Time at Greenwich, Jan. 2, 1837, into Sidereal Time.

Sidereal Time at the preceding Mean Noon, viz. January 2 18 47 39.09
 2^h 22^m 0^s 2 0 19.71
 For Mean Intervals. { The Table gives the Equivalent Sidereal Intervals, 22 3.61
 25 25.07
 0.62
 The Sum is the Sidereal Time required, 21 10 28.10

TABLE

For converting INTERVALS of SIDEREAL Time into Equivalent INTERVALS
MEAN SOLAR Time.

HOURS.			MINUTES.			SECONDS.		
Hours of Sidereal Time.	Equivalents in Mean Time.	Minutes of Sidereal Time.	Equivalents in Mean Time.	Minutes of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.
	^h ^m ^s		^m ^s		^m ^s		^s	
1	0 59 50.1704	1	0 59.8362	31	30 54.9214	1	0.9973	31 30
2	1 59 40.3409	2	1 59.6723	32	31 54.7576	2	1.9945	32 31
3	2 59 30.5113	3	2 59.5085	33	32 54.5937	3	2.9918	33 32
4	3 59 20.6818	4	3 59.3447	34	33 54.4299	4	3.9891	34 33
5	4 59 10.8522	5	4 59.1809	35	34 54.2661	5	4.9864	35 34
6	5 59 1.0226	6	5 59.0170	36	35 54.1023	6	5.9836	36 35
7	6 58 51.1931	7	6 58.8532	37	36 53.9384	7	6.9809	37 36
8	7 58 41.3635	8	7 58.6894	38	37 53.7746	8	7.9782	38 37
9	8 58 31.5340	9	8 58.5256	39	38 53.6108	9	8.9754	39 38
10	9 58 21.7044	10	9 58.3617	40	39 53.4470	10	9.9727	40 39
11	10 58 11.8748	11	10 58.1979	41	40 53.2831	11	10.9700	41 40
12	11 58 2.0453	12	11 58.0341	42	41 53.1193	12	11.9672	42 41
13	12 57 52.2157	13	12 57.8703	43	42 52.9555	13	12.9645	43 42
14	13 57 42.3862	14	13 57.7064	44	43 52.7917	14	13.9618	44 43
15	14 57 32.5566	15	14 57.5426	45	44 52.6278	15	14.9591	45 44
16	15 57 22.7270	16	15 57.3788	46	45 52.4640	16	15.9563	46 45
17	16 57 12.8975	17	16 57.2150	47	46 52.3002	17	16.9536	47 46
18	17 57 3.0679	18	17 57.0511	48	47 52.1364	18	17.9509	48 47
19	18 56 53.2384	19	18 56.8873	49	48 51.9725	19	18.9481	49 48
20	19 56 43.4088	20	19 56.7235	50	49 51.8087	20	19.9454	50 49
21	20 56 33.5792	21	20 56.5597	51	50 51.6449	21	20.9427	51 50
22	21 56 23.7497	22	21 56.3958	52	51 51.4810	22	21.9399	52 51
23	22 56 13.9201	23	22 56.2320	53	52 51.3172	23	22.9372	53 52
24	23 56 4.0906	24	23 56.0682	54	53 51.1534	24	23.9345	54 53
		25	24 55.9044	55	54 50.9896	25	24.9318	55 54
		26	25 55.7405	56	55 50.8257	26	25.9290	56 55
		27	26 55.5767	57	56 50.6619	27	26.9263	57 56
		28	27 55.4129	58	57 50.4981	28	27.9236	58 57
		29	28 55.2490	59	58 50.3343	29	28.9208	59 58
		30	29 55.0852	60	59 50.1704	30	29.9181	60 59

TABLE

For converting INTERVALS of SIDEREAL Time into Equivalent INTERVALS of
MEAN SOLAR Time.

FRACTIONS OF SECONDS.

Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.
0.01	^s 0.00997	0.34	^s 0.33907	0.67	^s 0.66817
0.02	0.01995	0.35	0.34904	0.68	0.67814
0.03	0.02992	0.36	0.35902	0.69	0.68812
0.04	0.03989	0.37	0.36899	0.70	0.69809
0.05	0.04986	0.38	0.37896	0.71	0.70806
0.06	0.05984	0.39	0.38894	0.72	0.71803
0.07	0.06981	0.40	0.39891	0.73	0.72801
0.08	0.07978	0.41	0.40888	0.74	0.73798
0.09	0.08975	0.42	0.41885	0.75	0.74795
0.10	0.09973	0.43	0.42883	0.76	0.75793
0.11	0.10970	0.44	0.43880	0.77	0.76790
0.12	0.11967	0.45	0.44877	0.78	0.77787
0.13	0.12965	0.46	0.45874	0.79	0.78784
0.14	0.13962	0.47	0.46872	0.80	0.79782
0.15	0.14959	0.48	0.47869	0.81	0.80779
0.16	0.15956	0.49	0.48866	0.82	0.81776
0.17	0.16954	0.50	0.49864	0.83	0.82773
0.18	0.17951	0.51	0.50861	0.84	0.83771
0.19	0.18948	0.52	0.51858	0.85	0.84768
0.20	0.19945	0.53	0.52855	0.86	0.85765
0.21	0.20943	0.54	0.53853	0.87	0.86762
0.22	0.21940	0.55	0.54850	0.88	0.87760
0.23	0.22937	0.56	0.55847	0.89	0.88757
0.24	0.23934	0.57	0.56844	0.90	0.89754
0.25	0.24932	0.58	0.57842	0.91	0.90752
0.26	0.25929	0.59	0.58839	0.92	0.91749
0.27	0.26926	0.60	0.59836	0.93	0.92746
0.28	0.27924	0.61	0.60833	0.94	0.93743
0.29	0.28921	0.62	0.61831	0.95	0.94741
0.30	0.29918	0.63	0.62828	0.96	0.95738
0.31	0.30915				0.96735
0.32	0.31913				
0.33	0.32910				

This TABLE is useful for the conversion of SIDEREAL into MEAN SOLAR Time.
Mean Solar Time required = Mean Time at the preceding Sidereal Noon + the Equivalent to the given Sidereal Time.

EXAMPLE.—To convert 21^h 10^m 28^s.10 Sidereal Time at Greenwich, Jan. 2, 1837, into Mean Time.

Mean Time at the preceding Sidereal Noon, viz. January 1^d 5^h 15^m 25^s.65
 For Sidereal Intervals, { 21^h 0^m 0^s } The Table gives the Equivalent
 { 10 0 } Mean Intervals, { 20 56 33.58
 { 28 0.10 } { 9 58.36
 { 0.10 } { 27.92
 { 0.10 } { 10

The Sum is the Mean Time required, Jan. 2 2 22 25.61

LATITUDES AND LONGITUDES OF THE PRINCIPAL
OBSERVATORIES.

The Longitudes are reckoned from the Meridian of Greenwich.
North Latitudes and West Longitudes are indicated by the sign + :
South Latitudes and East Longitudes by the sign —.

ABERDEEN - - - - -	(Marischal College.)	
	Lat. + $57^{\circ} 8' 57''.8$	} <i>Ast. Nach.</i> vol. x. page 211.
	Long. + $0^h 8^m 22''.78$	
ABO - - - - -	Lat. + $60^{\circ} 26' 57''$	} <i>Argelander's Observations</i> , vol. i. page 21, and vol. ii. pages 25, 26.
	Long. — $1^h 29^m 8''.8$	
ALTONA - - - - -	(Prof. Schumacher.)	
	Lat. + $53^{\circ} 32' 45''$	} <i>Gauss on the Latitudes of Göttingen and Altona</i> , page 71. (Göttingen, 1830.)
	Long. — $0^h 39^m 46''.6$	
ARMAGH - - - - -	Lat. + $54^{\circ} 21' 12''.7$	} Communicated by the Rev. Robinson.
	Long. + $0^h 26^m 35''.5$	
BEDFORD - - - - -	(Capt. Smyth, R.N.)	
	Lat. + $52^{\circ} 8' 27''.6$	} <i>Mem. Ast. Soc.</i> vol. v. page 3.
	Long. + $0^h 1^m 51''.97$	
BERLIN - - - - -	Lat. + $52^{\circ} 31' 13''.5$	} <i>Berliner Astron. Jahrbuch</i> 1833, page 249.
	Long. — $0^h 53^m 35''.5$	
BIGGLESWADE - - -	(Mr. Maclear.)	
	Lat. + $52^{\circ} 5' 25''$	} <i>Mem. Ast. Soc.</i> vol. v. page 3.
	Long. + $0^h 1^m 3''.5$	
BREMEN - - - - -	(Dr. Olbers.)	
	Lat. + $53^{\circ} 4' 36''$	} <i>Ast. Nach.</i> vol. i. page 240.
	Long. — $0^h 35^m 15''.9$	
	This is the mean of the results given in <i>Ast. Nach.</i> vol. i. page 240; vol. iv. page 392; vol. v. page 247; vol. viii. pages 131 and 132.	
BUDA - - - - -	(Ofen.)	
	Lat. + $47^{\circ} 29' 12''.2$	} <i>Zeitschrift für Astronomie</i> , vol. i. page 70; and <i>Mem. Ast. Soc.</i> vol. i. page 280.
	Long. — $1^h 16^m 12''.7$	
	Zach's <i>Correspond. Astron.</i> vol. i. page 263; and <i>Zeitschrift für Astronomie</i> , vol. i. page 507.	
BUSHEY HEATH - - -	(Colonel Beaufoy.)	
	Lat. + $51^{\circ} 37' 44''.3$	} <i>Mem. Ast. Soc.</i> vol. ii. page 12.
	Long. + $0^h 1^m 20''.93$	

LATITUDES AND LONGITUDES OF THE PRINCIPAL
OBSERVATORIES.

Cambridge	- - -	Lat. + 52° 12' 50''·7	<i>Airy's Observations</i> , vol. i. page 87.
		Long. — 0 ^h 0 ^m 23 ^s ·54	<i>Trans. Camb. Phil. Soc.</i> 1828. (<i>Airy on the Long. of the Cambridge Observatory.</i>)
Port of Good Hope	-	Lat. — 33° 56' 3''	<i>Mem. Roy. Ast. Soc.</i> vol. vi. page 130.
		Long. — 1 ^h 13 ^m 55 ^s ·0	Communicated by Mr. Henderson.
Christiana	- - -	Lat. + 59° 54' 5''	<i>Ast. Nach.</i> vol. vi. page 148.
		Long. — 0 ^h 42 ^m 59 ^s ·8	<i>Ast. Nach.</i> vol. v. page 382.
Copenhagen	- - -	(University.)	
		Lat. + 55° 40' 53''	<i>Ast. Nach.</i> vol. v. page 366.
		Long. — 0 ^h 50 ^m 19 ^s ·8	<i>Ast. Nach.</i> vol. ix. page 164.
Acow	- - -	Lat. + 50° 3' 49''·7	<i>Ast. Nach.</i> vol. viii. page 176; and vol. x. page 228.
		Long. — 1 ^h 19 ^m 52 ^s ·45	<i>Ast. Nach.</i> vol. x. page 232.
Orpat	- - -	Lat. + 58° 22' 47''	<i>Struve's Astronom. Observations</i> , vol. vi. page 60.
		Long. — 1 ^h 46 ^m 55 ^s	<i>Bessel's Tabulæ Regiomontanæ</i> , page 2.
Edinburgh	- - -	Lat. + 53° 23' 13''	} <i>Ast. Nach.</i> vol. x. page 274.
		Long. + 0 ^h 25 ^m 22 ^s	
Edinburgh	- - -	Lat. + 55° 57' 20''	} <i>Mem. Ast. Soc.</i> vol. iv. page 568.
		Long. + 0 ^h 12 ^m 43 ^s ·6	
Firenze	- - -	(St. Giovanni.)	
		Lat. + 43° 46' 41''·4	} <i>Zach's Correspondance Astronomique</i> , vol. i. pages 1 to 14.
		Long. — 0 ^h 45 ^m 3 ^s ·6	
Geneva	- - -	Lat. + 46° 11' 59''·4	<i>Mémoire sur une nouvelle détermination sur la Latitude de Genève.</i> By M. Gautier. (Geneve, 1830.)
		Long. — 0 ^h 24 ^m 37 ^s ·5	<i>Ast. Nach.</i> vol. viii. page 260.
Græth	- - -	(Seeberg.)	
		Lat. + 50° 56' 5''	<i>Gauss on the Latitudes of Göttingen and Altona</i> , page 80.
		Long. — 0 ^h	<i>Bessel's Tab. Reg.</i> page 2.
Göttingen	- - -	Lat. + 51°	<i>Gauss on the Latitudes of Göttingen and Altona</i> , page 71.
		Long. — 0 ^h	<i>Bessel's Tab. Reg.</i> page 2.
Greenwich	- - -	Lat.	<i>1st. Soc.</i> vol. ii. pages 318 19.
		Long.	

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

KENSINGTON	- - -	(Sir James South.) Lat. + 51° 30' 12" ·7 Long. + 0 ^h 0 ^m 46 ^s ·78	} <i>Mem. Ast. Soc.</i> vol. v. page 370.
KEW	- - -	Lat. + 51° 28' 37" Long. + 0 ^h 1 ^m 3 ^s	} <i>Baily's Astron. Tables and Formulæ</i> , page 123. (London, 1827)
KÜNIGSBERG	- - -	Lat. + 54° 42' 50" Long. — 1 ^h 22 ^m 0 ^s ·5	<i>Introduction to Bessel's Astron. Observations for 1821.</i> <i>Bessel's Tab. Reg.</i> page 2.
KREMSMUNSTER	- -	Lat. + 48° 3' 29" Long. — 0 ^h 56 ^m 32 ^s ·3	<i>Ast. Nach.</i> vol. vi. page 67. <i>Ast. Nach.</i> vol. iii. page 121.
MADRAS	- - -	Lat. + 13° 4' 9" ·2 Long. — 5 ^h 21 ^m 3 ^s ·77	} <i>Taylor's Result of Ast. Obs. at the Observatory</i> , vol. i. 1831 pages 94 & 95. (Madras, 1832)
MAKERSTOUN	- - -	(Sir T. M. Brisbane.) Lat. + 55° 34' 45" Long. + 0 ^h 10 ^m 4 ^s ·0	} <i>Ast. Nach.</i> vol. x. page 214.
MANHEIM	- - -	Lat. + 49° 29' 14" Long. — 0 ^h 33 ^m 51 ^s ·4	<i>Zach's Correspondance Astronomique</i> , vol. i. page 193. <i>Ast. Nach.</i> vol. ii. page 398.
MARSEILLES	- - -	Lat. + 43° 17' 50" ·1 Long. — 0 ^h 21 ^m 29 ^s ·0	<i>Zach's Attraction des Montagnes</i> vol. ii. page 591. <i>Ast. Nach.</i> vol. iv. page 36.
MILAN	- - -	(Brera.) Lat. + 45° 28' 1" Long. — 0 ^h 36 ^m 47 ^s ·2	<i>Zach's Correspondance Astronomique</i> , vol. v. page 300. <i>Ast. Nach.</i> vol. ix. page 312.
MODENA	- - -	Lat. + 44° 38' 53" Long. — 0 ^h 43 ^m 43 ^s ·2	} <i>Effém. Astron. di Milano</i> for 1829 pages 94 and 60.
MUNICH	- - -	(Bogenhausen.) Lat. + 48° 8' 45" Long. — 0 ^h 46 ^m 26 ^s ·5	<i>Ast. Nach.</i> vol. i. page 221. <i>Ast. Nach.</i> vol. viii. page 148.
NAPLES	- - -	(Capo di Monte.) Lat. + 40° 51' 46" ·6 Long. — 0 ^h 57 ^m 0 ^s ·3	<i>Ast. Nach.</i> vol. v. page 294. Communicated by M. Cacciatori to Captain B. Hall, R.N.
NICOLÆFF	- - -	Lat. + 46° 58' 20" ·6 Long. — 2 ^h 7 ^m 55 ^s ·1	<i>Ast. Nach.</i> vol. vii. page 261. <i>Ast. Nach.</i> vol. vii. page 306.
ORMSKIRK	- - -	(Rev. W. R. Dawes.) Lat. + 53° 34' 18" Long. + 0 ^h 11 ^m 36 ^s	} <i>Mem. Ast. Soc.</i> vol. v. page 370.

LATITUDES AND LONGITUDES OF THE PRINCIPAL
OBSERVATORIES.

FORD - - - -	Lat. + 51° 45' 40"	Long. + 0 ^h 5 ^m 1 ^s ·5	} <i>Requisite Tables</i> , 3rd edit. (from 'Trig. Survey.)
DUA - - - -	Lat. + 45° 24' 2"	Long. — 0 ^h 47 ^m 29 ^s ·2	
LERMO - - -	Lat. + 38° 6' 44"	Long. — 0 ^h 53 ^m 25 ^s ·6	} <i>Cacciatore</i> , in Books 7 and 8 of <i>Palermo Observations</i> . Communicated by M. Cacciatore to Captain B. Hall, R.N.
RAMATTA - - -	Lat. — 33° 48' 49 ^{''} ·8	Long. — 10 ^h 4 ^m 6 ^s ·25	
RIS - - - -	Lat. + 48° 50' 13"	Long. — 0 ^h 9 ^m 21 ^s ·5	} <i>Phil. Trans.</i> for 1829. Part iii. pages 16 and 29. <i>Conn. des Tems</i> for 1835, page 356. <i>Phil. Trans.</i> for 1827. (<i>Hender- son on the Longitudes of Green- wich and Paris.</i>)
TERSBURGH - - -	Lat. + 59° 56' 31"	Long. — 2 ^h 1 ^m 15 ^s ·8	
RTSMOUTH - - -	Lat. + 50° 48' 3"	Long. + 0 ^h 4 ^m 23 ^s ·9	} <i>Requisite Tables</i> , 3rd edit. (from 'Trig. Survey.)
AGUE - - - -	Lat. + 50° 5' 18 ^{''} ·5	Long. — 0 ^h 57 ^m 41 ^s ·9	
OME - - - -	(Roman College.) Lat. + 41° 53' 52"	Long. — 0 ^h 49 ^m 54 ^s ·7	} <i>Conn. des Tems</i> for 1822, page 312. <i>Ast. Nach.</i> vol. viii. page 88.
. FERNANDO, near CADIZ - - - -	Lat. + 36° 27' 45 ^{''} or 42 ^{''}	Long. + 0 ^h 24 ^m 49 ^s ·1	
. HELENA - - -	Lat. — 15° 55' 26 ^{''}	Long. + 0 ^h 22 ^m 50 ^s	} <i>Zach's Correspondance Astrono- mique</i> , vol. xiv. pages 240 to 243. <i>Ast. Nach.</i> vol. ix. page 358.
OUGH - - - -	(Sir J. F. W. Herschel.) Lat. + 51° 30' 20"	Long. + 0 ^h 2 ^m 24 ^s	
UTH KILWORTH -	(Rev. W. Pearson.) Lat. + 52° 25' 51 ^{''}	Long. + 0 ^h 4 ^m 26 ^s ·0	} <i>Baily's Astron. Tables and For- mulae</i> , p.124. (London, 1827.) <i>Astronomy</i> , vol. ii. page 100.
EYER - - - -	Lat. + 49° 12' 53 ^{''} ·2	Long. — 0 ^h 16 ^m 3 ^s ·3	

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

TURIN	-	-	-	(New Observatory.)		
					Lat. $+ 45^{\circ} 4' 6''$	} Communicated by M. Captain B. Hall, R.N.
					Long. $- 0^h 30^m 48^s \cdot 4$	
VERONA	-	-	-	(Lyceum.)		
					Lat. $+ 45^{\circ} 26'$	(Approximate.)
					Long. $- 0^h 44^m 0^s \cdot 1$	<i>Effem. Astron. di Milano</i> page 60.
VIENNA	-	-	-	Lat. $+ 48^{\circ} 12' 35''$		<i>Littrow's Astron. Obs</i>
						Part viii. page 124.
				Long. $- 1^h 5^m 31^s \cdot 9$		<i>Ast. Nach.</i> vol. iii. page
VIVIERS	-	-	-	(M. Flaugergues.)		
					Lat. $+ 44^{\circ} 29' 11''$	<i>Zach's Correspondance</i>
						<i>mique</i> , vol. ii. page 13
WILNA	-	-	-	Lat. $+ 54^{\circ} 41' 0''$		<i>Ast. Nach.</i> vol. iv. page
				Long. $- 1^h 41^m 11^s \cdot 9$		<i>Ast. Nach.</i> vol. viii. pag

apparent time;" hence it appears that the corresponding mean time is $0^h 3^m 56^s.77$, that the mean Sun had passed the meridian previously to the true Sun, and that at the instant of observation the mean time clock or chronometer ought to indicate this time.

A mere inspection of the columns of the Ephemeris is, of itself, sufficient to show that the quantities are continually varying, and that some reduction is necessary where data are to be obtained for any time differing from that for which the quantities are registered. Take, for instance, the Sun's Right Ascension on Page II. of the month of January; on January 1, it is $18^h 47^m 39^s.23$; on January 2, it is $18^h 52^m 4^s.03$; in the course of 24 mean hours it has therefore increased by $4^m 24^s.80$. If, then, the Right Ascension were required for any time between the Mean Noons of January 1 and 2, as at 6^h from Mean Noon of January 1, it would be necessary to increase the Right Ascension on January 1, by the proportional part of the daily increase due for the 6^h , viz. by one-fourth part, or $1^m 6^s.20$. This would in all cases be required, even under the meridian of Greenwich, for which the quantities have been specially computed. Let a person be now supposed to be under a meridian 15° West of Greenwich. The positions of the heavenly bodies, as referred to the centre of the Earth, are independent of meridians, and are the same for all places at the same absolute instant; but the relative times at Greenwich and the assumed meridian would be different. If it were 1^h from mean noon at the one place, it could not be 1^h from mean noon at the other; for when we speak of time, we mean, as regards a visible phenomenon, the distance of the Sun *westward* from a given meridian, and at the same absolute moment of time the Sun *cannot* be at the same distance (*reckoning westward*) from two meridians which are 15° distant from each other. Before we can make use of the Ephemeris, it is therefore necessary to ascertain, in every instance, the distance of the Sun (*in time*) from the meridian of Greenwich, or what is commonly called the corresponding Greenwich time; and this is evidently equal to the given time under the assumed meridian, *increased* or *diminished* by the difference (*in time*) of the two meridians, according as the assumed meridian is to the *Westward* or *Eastward* of Greenwich. In a mean Solar day, or 24 mean Solar hours, the Earth, by its rotation from West to East, has caused every meridian in succession from East to West to pass the mean Sun; and since the motion is uniform, all the meridians distant from each other 15° will have passed the mean Sun, at intervals of one mean hour; the meridian to the Eastward passing first, or being, as compared with the Sun, always one mean hour in advance of the Westerly meridian. When it is 6^h from mean noon at a place 15° West of Greenwich, it is therefore 7^h from mean noon at Greenwich; and it is for this Greenwich time that we must deduce the quantities required from the Ephemeris.

If a chronometer adjusted to Greenwich mean time be at hand, the Greenwich time may be immediately obtained by applying a correction, deduced from the daily rate and interval elapsed, and this will be preferable in all cases for obtaining the requisite data from the Ephemeris.

The day adopted in this Ephemeris is supposed to begin at mean noon, or at the instant when a clock or chronometer shows $0^h 0^m 0^s$, Greenwich mean time, and is continued through the 24 hours, to the following mean noon, when another day begins. It may therefore be called the *Mean Astronomical Day*, although, in practice, astronomers begin the day at the moment the true Sun's centre is on their meridian.

In the civil, or common, method of reckoning, the day is supposed to commence at the *preceding* midnight, and to be counted only to 12 hours or noon, when the 12 hours are reckoned over again to the next midnight. The civil reckoning is therefore always 12^h in advance of the astronomical reckoning; and the civil time corresponding

to any given astronomical time is hence readily found by adding 12^h to the latter: thus, if to Jan. $1^d 7^h 49^m$, astronomical time, be added 12^h , the sum will be Jan. $1^d 19^h 49^m$, or Jan. $1^d 7^h 49^m$ P. M. civil time. Again, to Jan. $1^d 15^h 35^m$, astronomical time, add 12^h ; the sum will be Jan. $2^d 3^h 35^m$ A. M. civil time. It thus appears that, from noon to midnight, the day of the month and the hour of the day are the same in both methods; but from midnight to noon they differ; for at midnight, when a new civil day commences, the astronomical day wants 12^h of its completion.

The conversion of civil into astronomical time is on the contrary performed by *diminishing* the former by 12^h . Thus, January $2^d 3^h 35^m$ A. M. civil time, diminished by 12^h , leaves January $1^d 15^h 35^m$, for the corresponding astronomical time.

To each month there are devoted twenty-two pages, distinguished by the Roman numerals I. to XXII.

For convenience of interpolation, the quantities that follow next in order of succession have been added at the bottom of each page. Thus the quantities opposite to February 1 will be found inserted also opposite to January 32, the number of the days in each month having been intentionally increased for such purpose.

Page I. of each Month.

The contents of this page are adapted to *Apparent Noon*, or the instant when the Sun's centre is on the meridian of Greenwich. The *Sun's Right Ascension*, here given, is *affected with Aberration*, and reckoned from the true Equinox; it is therefore the Sidereal Time at Apparent Noon, or the time which ought to be shown by a Sidereal Clock, at that instant. The *Sun's Declination*, at Apparent Noon, is the *apparent* angular distance of the Sun from the Equator, measured on the meridian.

The columns entitled "Diff. for 1 hour" are intended to facilitate the reduction of the quantities from the meridian of Greenwich to any other meridian. The values of these quantities for any proposed *mean* time will, however, be more accurately ascertained by means of the numbers on page II., from which, indeed, they have been derived.

The *Sidereal Time of the Sun's Semidiameter passing the Meridian* is useful for reducing a transit observation of either limb of the Sun, when one only has been observed, to the transit of the centre.

The *Equation of Time* is the difference between Apparent and Mean Time, and therefore serves for the conversion of either time into the other. The numbers here given, show, for Greenwich Apparent Noon, the distance of the mean Sun from the meridian, or the portion of time to be *added to*, or *subtracted from*, (according to the precept at the head of the column,) Greenwich Apparent Noon to obtain the corresponding Mean Time at the same meridian, or the time to be shown by the Mean Time Clock. It differs from the Equation of Time, because the equation itself varies in the interval between Apparent Noon and the next Apparent Noon.

At page I. of the month of April, we observe the following column, headed "Equation of Time," which signifies that a change of precept occurs in the month; and between the equations opposite to the 11th and 12th of the month, a black line, indicating that the change occurs between those days. The upper precept applies to all the days of the month; and the lower precept to all the days of the month. The Equation of Time is to be *added to* the Apparent Time at the instant at which the equation becomes 0.

15th and 16th days of the month; but after that instant the equation is to be subtracted from Apparent to obtain Mean Time.

Where time is deduced from observations of the Sun, the *immediate* result is *apparent* time; to convert it into mean time, the equation of time is necessary, and it is to be applied to apparent time, according to the precept at the head of the column.

Thus, suppose the apparent time deduced from an observation of the Sun on January 16, 1837, in longitude 45° or 3^h east of Greenwich, to be 6^h , and it were required to convert it into mean time: Subtracting the difference of longitude 3^h from the apparent time at the place, we have 3^h for the corresponding apparent time at Greenwich. The difference of the equation for 1 hour is $0^m 83.1$, which, multiplied by 3, gives $2^m 49.3$ for the variation in 3 hours, and this being added (because the equation is increasing) to $10^m 9^s 98$, the equation of time at apparent noon, the result is $10^m 12^s 47$, to be added (according to the precept at the head of the column) to the given apparent time 6^h , whence we obtain $6^h 10^m 12^s 47$, for the mean time required.

Page II. of each Month.

The Sun's *Right Ascension* and *Declination* at mean noon have been deduced from its longitude and latitude given at page III., and the *apparent* obliquity of the ecliptic at page 266. They denote the *apparent* position of the true Sun with reference to the equator, and the true equinox, at the instant the Greenwich mean time clock, or chronometer, indicates $0^h 0^m 0^s$, or when the hour angle of the true Sun is equal to the equation of time.

To find the Right Ascension and Declination for any other mean time and place, as at $9^h 20^m$ A.M. March 2, 1837, in longitude 98° , or $6^h 32^m$ West of Greenwich. The astronomical time, corresponding to $9^h 20^m$ A.M. March 2, is $21^h 20^m$ from the noon of March 1, or March $1^d 21^h 20^m$, agreeably to what has been said before. The longitude, being West of Greenwich, must be added to March $1^d 21^h 20^m$, and the result, March $2^d 3^h 52^m$, is the corresponding Greenwich mean time, for which the Right Ascension and Declination are to be found. The difference between the Right Ascensions on March 2 and March 3 is $3^m 43^s 86$, that is, in the 24 mean hours succeeding the Mean Noon of March 2, the Right Ascension has increased by this quantity; it will, therefore, have received a proportional part of the increase in $3^h 52^m$, and the amount is readily obtained by this proportion, $24^h : 3^m 43^s 86 :: 3^h 52^m : 36^s 07$; which, being added to $22^h 52^m 40^s 14$, the Right Ascension at Mean Noon of March 2, gives $22^h 53^m 16^s 21$, for the Right Ascension at the time proposed.

In a similar manner the Declinations indicate a decrease of $22' 57'' 8$ in the 24 hours; therefore $24^h : 22' 57'' 8 :: 3^h 52^m : 3' 42'' 0$, the proportional part of the decrease for $3^h 52^m$, which, subtracted from $S. 7^{\circ} 9' 50'' 6$, leaves $S. 7^{\circ} 6' 8'' 6$, for the Declination required.

The Semidiameter of the Sun. The numbers in this column express the angle at the centre of the earth subtended by the Sun's Semidiameter, and are required for reducing observations of the limb to the centre, as in the instance of measuring the altitude of the Sun's upper or lower limb, or the distance of the Moon from the Sun.

Equation of Time. The numbers in this column are the values of the equation at the instant of Mean Noon, and therefore serve more particularly to convert *Mean* into *Apparent* Time: for which purpose we have only to apply the equation according to the precept at the head of the column. Thus, if from mean noon of April 1, or

12^h be subtracted the equation $3^m 57^s.07$, the difference $11^h 56^m 2^s.93$ is the corresponding apparent time. To find the equation of time at 10^h P.M. mean time on April 15, 1837, in longitude 62° , or $4^h 8^m$, West of Greenwich. Add the difference of longitude to the given time, because it is West, and the corresponding astronomical mean time at Greenwich is April $15^d 14^h 8^m$. The variation in 24 hours is $14^s.84$, that is, the *sum* of the equations belonging to the noons of the 15th and 16th, because the equation has decreased to 0 and then increased in the interval, therefore

$$24^h : 14^s.84 :: 14^h 8^m : 8^s.74,$$

which, being greater than $0^m 1^s.02$, the equation on the 15th, which was decreasing, shows that in the $14^h 8^m$ the equation has passed through its state of decrease to zero, or 0, and is now increasing. The difference $7^s.72$ is the equation of time at the time proposed, and is to be added to mean time, because it has passed the zero.

Sidereal Time at Mean Noon is the angular distance of the First point of Aries, or the true Vernal Equinox, from the meridian, at the instant of Mean Noon: it is therefore the Right Ascension of the Mean Sun; or the time which ought to be shown by a Sidereal Clock at Greenwich, when the Mean Time Clock indicates $0^h 0^m 0^s$.

A Sidereal Clock represents the rotation of the Earth on its axis, as referred to the Stars, its hour-hand performing a complete revolution through the 24 hours in the interval between the departure of any meridian from a Star and its next return to it. At the moment that the Vernal Equinox, or a Star whose Right Ascension is $0^h 0^m 0^s$, is on the meridian of Greenwich, the Sidereal Clock ought to show $0^h 0^m 0^s$, and at the succeeding return of the Star, or the Equinox, to the same meridian, the Clock ought to indicate the same time.

The sidereal time here given is that in common use among astronomers, and expresses the actual hour-angle from the meridian, westward, of the true equinoctial point at the moment of observation. It is therefore affected by the equation of the equinoxes; and is not, strictly speaking, a *mean* or uniformly increasing quantity. It ought, therefore, to be termed *apparent sidereal time* in the same manner as apparent solar time reckons from the actual arrival of the sun's centre on the meridian; and in like manner, as mean solar time is reckoned from the arrival of an imaginary sun, moving uniformly with its mean velocity, so *mean sidereal time* (whose expression would be simply $\frac{\odot\text{'s mean longitude}}{15}$) would be reckoned from the transit of, not the

true, but the *mean* equinoctial point. The smallness of the fluctuations to which a clock, regulated to *apparent* sidereal time compared with one regulated to *mean* sidereal time, is subject, being at the utmost only $2^s.3$ in a period of nineteen years, has prevented the practical inconvenience of this from being felt: no clock being sufficiently perfect to go during so long a period without frequent re-adjusting; and as the corrections applied by astronomers to the observed right ascensions of all objects are adapted to this supposed irregularity in the rate of the stars, the mean right ascensions thence deduced come out correct. It has, therefore, been thought necessary, in this instance, to depart from received usage, however the objectionable such a mode of counting time may appear, since a change in the mode would involve the necessity of a corresponding change in all tables of astronomical numbers.

The Sidereal time at Mean Noon is used in all cases where the mean solar time is to be deduced from observations of the heavenly bodies, and to facilitate the reduction of sidereal to mean solar time, a table of the variation of the tables commonly used for that purpose, called *Table of Aries*, is given at the end of the *Table of Aries*.

Solar Time, and the corresponding Table of Retardation of Mean on Sidereal Time according to the following rule:—Convert the interval from the mean noon immediately preceding, from the denomination given, to that required; and if mean time be required, the result will at once be that which the clock should show; but if sidereal time be that sought, the result must be added to the sidereal time at the preceding mean noon.

Example:—To convert $21^{\text{h}} 9^{\text{m}} 23^{\text{s}}.04$ sidereal time, Jan. 2, 1837, into mean solar time, for the meridian of Greenwich.

Sidereal time given	- - - - -	^h 21 ^m 9 ^s 23.04
Sidereal time at mean noon, January 2	- - - - -	18 47 39.09
Interval in sidereal time from mean noon	- - - - -	2 21 43.95
Retardation of mean on sidereal time for the interval	-	— 23.22
Mean solar time required	- - - - -	2 21 20.73

which is the interval elapsed since mean noon, expressed in mean time; and therefore the time which ought to be shown by a mean time clock.

Vice versâ, to convert $2^{\text{h}} 21^{\text{m}} 20^{\text{s}}.73$ mean solar time, January 2, 1837, into sidereal time for the same meridian.

Mean interval from mean noon, January 2	- - - - -	^h 2 ^m 21 ^s 20.73
Acceleration of sidereal on mean time for the interval	-	+ 23.22
Sidereal interval from mean noon	- - - - -	2 21 43.95
Sidereal time at mean noon, January 2	- - - - -	18 47 39.09
Sidereal time required	- - - - -	21 9 23.04

which ought to be the time shown by the sidereal clock at the instant in question.

If the place of observation be not on the meridian of Greenwich, the sidereal time must be corrected by the *addition* of $9^{\text{s}}.8563$ for each hour (and proportional parts for the minutes and seconds) of longitude, if the place be to the west of Greenwich; but by its *subtraction*, if to the east. Thus, in $9^{\text{h}} 10^{\text{m}} 6^{\text{s}}$ west longitude, the sidereal time at mean noon, January 2, instead of being, as in the foregoing Example, $18^{\text{h}} 47^{\text{m}} 39^{\text{s}}.09$, must be corrected by adding $1^{\text{m}} 30^{\text{s}}.37$, thus giving $18^{\text{h}} 49^{\text{m}} 9^{\text{s}}.46$ for the time to be used, instead of that set down in the column.

The conversion of mean solar to sidereal time, and *vice versâ*, may, however, be performed, and with perhaps less liability to error, by means of this and of the column entitled *Mean Time of Transit of the First point of Aries*, at page XXII. of each month, using the Tables of Time Equivalents, inserted at pages 488 to 491.

To convert mean solar into sidereal time: To the sidereal time at the *preceding* mean noon add the sidereal interval corresponding to the given mean time; the sum will be the sidereal time required. (See Example at page 489.)

To convert sidereal into mean solar time: To the mean time at the *preceding* sidereal noon, add the mean interval corresponding to the given sidereal time; the sum will be the mean solar time required. (See Example at page 491.)

In this mode of reduction there is not, as in the former, by means of the Tables of Acceleration and Retardation, any distinction of cases, all the quantities being additive.

The Tables of Time Equivalents differ from the Tables of Acceleration and Retardation, in containing the *values* of intervals of each species of time, expressed in

terms of the other, instead of the *corrections*, respecting the proper application of which, a difficulty is sometimes felt by unpractised computers.

Sidereal time at mean noon is also used in finding the mean time of transit of a heavenly body.

Page III. of each Month.

The *Sun's Longitude*, here given, is affected with aberration, and reckoned from the *true* equinox: it is therefore the *apparent* longitude of the Sun at the instant of mean noon; or it is (if p denote the Radius Vector) the *true* longitude of the Sun at the time $0^h - 495^s.775 p$, because aberration causes the Sun to appear behind its true place in the Ecliptic.

The *Sun's Latitude* is the angular distance of the Sun's centre from the plane of the Ecliptic, measured on a circle perpendicular to that plane.

The *Logarithm of the Radius Vector of the Earth* is the logarithm of the distance between the centre of the Earth and the *apparent* place of the centre of the Sun at mean noon, the mean distance, or the semi-axis major of the orbit, being considered unity.

These quantities are derived *immediately* from the Solar tables, and enter into, indeed are the foundation of, nearly all the subsequent operations in the Ephemeris. Whenever the *true* longitude of the Earth is required, as in calculating the Geocentric position of a Planet or Comet from its Heliocentric position, it is necessary to reduce the *apparent* longitude of the Sun to the *true*, by correcting it for aberration. The Sun's aberration for every tenth day is given at page 266, and may thence be readily obtained for any other day of the year. (See *Sun's Aberration*, page 515.) In strictness, the *Logarithm of the Radius Vector* should also be corrected for aberration, but this is generally neglected, the correction being too small to affect the accuracy of the results in practice.

The Sun's longitude, entering into the expressions for aberration and Solar nutation, is required for the reduction of the Stars' places.

The *Moon's Semidiameter* is the angle under which her Semidiameter would appear if viewed from the centre of the Earth; and her *Horizontal Parallax* is the *greatest* angle under which the Earth's Equatorial Semidiameter would appear if seen from the centre of the Moon. The former is requisite to obtain the position of the centre from an observation of the Moon's *limb*, as in all cases of altitudes or lunar distances. The latter, for computing the horizontal parallax of the Moon at any given latitude on the Earth, *considered as a Spheroid*; also for finding the parallax in altitude, Right Ascension, &c., for the purpose of reducing an observation of the Moon made on the surface of the Earth, to what it would have been if made at the centre.

In reducing observations of the Moon made at sea, the horizontal *equatorial* parallax is generally used for finding the parallax in altitude, without regarding the previous reduction to the Spheroid; but in calculations requiring considerable precision, as in lunar occultations and solar eclipses, this reduction cannot be dispensed with.

Example. To find the Moon's Semidiameter January 17, 1837, at a place 15° , or 1^h at the place, expressed in mean astronomical time, by subtracting 1^h , because the place is to the west of Greenwich, for the corresponding time at Greenwich. The semidiameter given for midnight of the variation in 12 hours, for ordinary purposes at sea, it

Horizontal Parallax at 6^h A.M. of Greenwich. The civil time January $16^d 18^h$, from which subtracting, we have January $16^d 17^h$ right. The semidiameter from the equatorial part of the variation; and for the purpose of the

correction of the registered value preceding the given time; thus the semidiameter for midnight, or 12^h, of the 16th, is 14' 54''·3, and for the 17th at noon, or 12^h, is 14' 51''·1; the difference 3''·2 is the variation in 12 hours. Therefore,

$$12^h : 3''\cdot2 :: 5^h : 1''\cdot33,$$

which, *subtracted* (because the quantities are decreasing) from 14' 54''·3, gives 14' 53''·0 for the Moon's Semidiameter at the time proposed. Similarly, the Horizontal Parallax at midnight of the 16th is 54' 41''·8; and at the noon of the 17th it is 54' 30''·0; the difference 11''·8 is the variation in the 12 hours which precede the given time; therefore, 12^h : 11''·8 :: 5^h : 4''·92, or 4''·9, which *subtracted* (because the quantities are decreasing) from 54' 41''·8 gives 54' 36''·9 for the Horizontal Parallax required. If greater accuracy be desired, a further correction must be applied to the values just obtained, on account of second differences, to compensate the error produced by supposing the first differences uniform. But the greatest error in the semidiameter which can arise by this supposition is about two-tenths of a second: in the present instance it is not one-tenth; for, select four semidiameters from the Ephemeris, two preceding, and two following the given time, and take the first and second differences, thus:—

January 16,	0 ^h	14' 58'·0	—	3'·7	+	0'·5
	12	14' 54'·3	—	3'·2	+	0'·6
17,	0	14' 51'·1	—	2'·6	+	0'·6
	12	14' 48'·5				

The mean of the second differences is 0''·55, and $\frac{1}{2}$ of this, which is the *greatest* error, is 0''·07.

A similar operation performed on the Parallaxes will show the error, that arises on the supposition of uniform or equal first differences, to be rather more than two-tenths of a second; it can never be more than about seven-tenths.

Page IV. of each Month.

The *Moon's Longitude and Latitude* at Mean Noon and Midnight indicate the position of the Moon at these respective times, referred to the Ecliptic at the true Equinox, as it would be seen from the centre of the earth. They are the results deduced immediately from the Lunar Tables, and are the foundation for the subsequent calculations in which the Moon is concerned. These quantities are of little use to the seaman, as the position of the Moon, with respect to the Ecliptic, is given for every hour in the succeeding pages; but the Moon's Longitude is in use in the formulæ for nutation, and is therefore necessary for its determination. In finding the Moon's Longitude and Latitude for any other times than those of Noon and Midnight, it is necessary to apply the equation of second, and sometimes even of third differences, on account of the irregular variation of her motion.

The *Moon's Age* at Mean Noon is the Mean Time elapsed since the Moon's conjunction with the Sun, or since the Sun and Moon had the same Longitude. The numbers in this column represent her age at Greenwich, and are expressed in day and decimal parts of a day.

The *Moon's Meridian Passage*.—This column contains the Greenwich Mean Time to the nearest tenth of a minute, at which the Moon's centre is on the upper Meridian.

Greenwich, and is useful to indicate when the Latitude may be obtained from an observed meridian altitude of the Moon; also, in conjunction with a Table of Semi-diurnal Arcs, to determine the times of the rising and setting of the Moon: it is likewise useful in finding the time of High Water.

When the symbol (\odot) denoting conjunction occurs, as on January 6, we are to understand that the Moon does *not* pass the *upper* meridian on that day at Greenwich. This is the case once in every lunation, and arises from the circumstance of the Lunar day being greater than the Mean Solar day, and including it within its limits. In the present instance, the excess is $1^h 7^m.4$, or the lunar day is equal to $25^h 7^m.4$ Mean Solar time; the Moon passes the meridian on the 5th at $23^h 36^m.1$, or $23^m.9$ *previously* to the noon of the 6th, and does not return to the same meridian until $0^h 43^m.5$ *after* the noon of the 7th. For the same reason there is also one day in every lunation on which the Moon does not transit the *lower* meridian, and this happens about the time of opposition, or when the difference of longitude of the Sun and Moon is 80° . In the list of Moon-culminating Stars, at pages 410 to 451, the days on which only one transit occurs are readily seen. On January 6th (page 410), for instance, it appears that the Moon transits the *lower* meridian only, while on the 20th (page 411), the only transit is that at the *upper* meridian.

To find the Mean Time of Transit under any other Meridian, suppose 45° or 3^h west of Greenwich, on January 15, 1837. The Meridian being to the west of Greenwich, the Transit will take place *after* the Greenwich time of Transit on the 15th; therefore take the difference between the Meridian Passages on the 15th and 16th, which is $0^h 47^m.2$. Then, $24^h : 0^h 47^m.2 :: 3^h : 5^m.9$, which *added* to the Greenwich Mean Time of Transit gives $7^h 33^m.8$ for the Mean Time of Transit at the given Meridian. Had the assumed Meridian been 3^h to the east of Greenwich, the Transit would have taken place *before* the Transit at Greenwich, and the proportional part of the difference between the 14th and 15th, viz., $5^m.7$, must in this case have been *subtracted*. The times thus deduced are only approximate; but they are sufficiently accurate for the purposes usually required.

Pages V. to XII. of each Month.

The *Moon's Right Ascension and Declination* for every hour of the day, with the *Difference of Declination for 10 minutes*. By means of the quantities here given, the Latitude, Time, Azimuth, Moon's rising and setting, &c., may be deduced, with nearly as little labour as is required in the case of the Sun. The numbers represent the position of the Moon, as it would appear from the centre of the Earth, with respect to the Equator and the true Equinox: and they are given for every hour, with the view of rendering any correction for second differences unnecessary, except where extreme precision is required. The Right Ascension for any time is readily obtained by simply adding the proportional part of the hourly variation due to the interval elapsed since the preceding hour. Thus, suppose the Right Ascension of the Moon were required at $8^h 45^m$ mean time of January 8, in longitude 60° , or 4^h east of Greenwich. The given time, $8^h 45^m$, diminished by 4^h , gives the corresponding Greenwich time $4^h 45^m$. The Right Ascension at 4^h is $21^h 4^m 47^s.35$, and at 5^h it is $21^h 7^m 22^s.81$; the difference, $2^m 35^s.46$, is the increase in the interval, or 60^m . Hence, $60^m : 2^m 35^s.46 :: 45^m : 1^m 56^s.60$, which being added to the Right Ascension at 4^h , gives $21^h 6^m 43^s.95$ for the Right Ascension at $4^h 45^m$ at Greenwich, or at $8^h 45^m$ under the proposed meridian. To find the Declination, we make use of the numbers in the column headed "Diff. Dec. for 10^m ." The number in this column standing

0° at the New Moon,
 90° at the First Quarter,
 180° at the Full Moon,
 270° at the Last Quarter.

The Moon's *Apogee* and *Perigee*. The numbers here given indicate hour, the Greenwich Mean Time at which the Moon is respectively at her least distance from the Earth.

Pages XIII. to XVIII. of each Month.

Lunar Distances.—These pages contain, for every third hour of Greenwich Time, the angular distances between the *centres* of the Moon and celestial bodies, such as they would appear to an observer at the centre of the Earth. As the Lunar Distance has been observed on the surface of the Earth, and not at the centre, by clearing it of the effects of parallax and refraction, the numbers on these pages enable us to ascertain the exact Greenwich mean time at which the Moon and the object have the same distance. They are arranged, from *west* to *east*, corresponding to the day with the object which is at the greatest distance *westward* of the observer. The precise order in which they appear in the heavens; W. indicating that the object is west, and E. east, of the Moon. Thus we have at one view, by a simple inspection of the date, all the lunar distances which are available for the determination of Longitude.

The columns headed “P. L. of Diff.” contain the Proportional Logarithms of the differences of the distances at intervals of three hours, which are used to find the Greenwich time corresponding to a given distance, according to the following method. For the given day, seek in the Ephemeris for the *nearest* distance *preceding* the given time, the given distance, and take the difference between it and the given distance. From the proportional logarithm of this difference subtract the proportional logarithm standing opposite to the said *nearest* distance in the Ephemeris; the remainder will be the proportional logarithm of a portion of time to be added to the hour of the day to the *nearest* distance, to obtain the approximate Greenwich mean time.

2. Take the difference between the proportional logarithms standing opposite to the distances in the Ephemeris which include the given distance.

3. With the approximate interval and this difference, as arguments, take out the correction from the table.

4. If the Proportional Logarithms are *decreasing*, add the correction to the approximate time; but if *increasing*, subtract it: the result will be the accurate Greenwich mean time.

Example I.—Suppose it were required to find the Greenwich Mean Time, at which the *true* distance between the Moon and α Arietis would be $22^{\circ} 6' 12''$ on August 22, 1837. It appears, by inspecting the distances, that the time must be between VI^h and IX^h: the *nearest* distance *preceding*, in order of time, the given distance is therefore the

Distance at VI ^h	-	-	-	$21^{\circ} 30' 27''$	and	P. L.	-	-	3113
True Distance	-	-	-	$22^{\circ} 6' 12''$					
<hr/>									
Difference	-	-	-	$0^{\circ} 35' 45''$	-	-	P. L.	-	7020
<hr/>									
Approximate Interval	-	1^h	13^m	13^s	-	-	P. L.	-	3907
<hr/>									

The difference between the Proportional Logarithms in the Ephemeris, at VI^h and IX^h, is 34. Opposite to $1^h 13^m$ (or the quantity nearest to it, $1^h 10^m$), and under 34, in the Table, we have for the correction 10^s , which, *added* to the Approximate Interval, $1^h 13^m 13^s$, because the Proportional Logarithms are *decreasing*, gives $1^h 13^m 23^s$, for the true interval from VI^h: and hence the Greenwich Mean Time is $7^h 13^m 23^s$.

We see that, in the preceding Example, the omission of this correction would only produce an error of $2'.5$ in the Longitude. Cases may however occur, in which it would be greater.

It will sometimes happen, though very seldom, that the difference of the Proportional Logarithms will exceed 88, the limit of the Table of Correction; in this case the Table may be entered with *half* the difference of the Proportional Logarithms and the Approximate Interval, and the corresponding correction *doubled*.

Example II.—Suppose it were required to find the Greenwich Mean Time, at which the *true* distance between the Moon and α Pegasi would be $33^{\circ} 36' 16''$ on September 12th, 1837. By inspecting the distances, it appears that the time must be between IX^h and *Midnight*; therefore take the

Distance at IX ^h	-	-	-	$34^{\circ} 18' 25''$	and	P. L.	-	-	3360
True Distance	-	-	-	$33^{\circ} 36' 16''$					
<hr/>									
Difference	-	-	-	$0^{\circ} 42' 9''$	-	-	P. L.	-	6305
<hr/>									
Approximate Interval	-	1^h	31^m	22^s	-	-	P. L.	-	2945
<hr/>									

difference between the Proportional Logarithms in the Ephemeris, at IX^h and is 143, the half of which is, say, 71; under this number in the Table, and at nearest the Approximate Interval, is $22'.5$: the correction is therefore 45^s ,

to be *subtracted* from the Approximate Interval, because the Proportional Logarithms are *increasing*; the time at Greenwich is therefore $10^h 30^m 37^s$.

The omission of the correction in the preceding example would produce an error of rather more than 11' in Longitude; it may, however, be considered as an extreme case, and such as will seldom be met with.

The proportional logarithms also serve to point out the Star which is most favourably circumstanced for accurate observation; that Star being to be preferred which has the least Proportional Logarithm opposite to it: for, the greater the velocity of the Moon from or towards a Star, the greater is the reliance to be placed on an observation of the distance; and it is a property of Proportional Logarithms to decrease as their natural numbers increase: a smaller Proportional Logarithm, therefore, indicates a greater velocity of the Moon, or a greater variation of distance in the interval, upon which the value of the observation depends. Thus, on January 28, 1837, between Noon and III^h, Mars is the most eligible star, because the Proportional Logarithm, 2758, is less than that of any other; and, by inspecting the columns of Proportional Logarithms, it will appear to deserve the preference until the end of the month, after which it is too far distant from the Moon for observation.

On the 28th day of January, between XV^h and XVIII^h, the following is the order of preference, as indicated by the Proportional Logarithms, viz., Mars, Jupiter, Antares, Regulus, Sun, Venus; between IX^h and Midnight on the 29th, Antares and Regulus are equally good, because the proportional logarithm of the difference is the same for each, the order of the others remains the same.

It is by no means to be inferred from these remarks that observations of any of the distances are to be neglected; on the contrary, every registered star should invariably be observed when an opportunity offers. If, however, on a comparison of results, a considerable difference should be discovered, the Proportional Logarithms will indicate the stars which are least liable to be affected by errors of observation, and therefore deserving of a greater degree of confidence as to the accuracy of the results obtained from them.

Page XIX. of each Month.

Configurations of the Satellites of Jupiter.

In addition to the explanation given at the foot of the page, it may be remarked, that when two Satellites are in or near conjunction, instead of the usual symbol (\odot), it has been thought better to place one above the other, without regard to their actual latitudes, but merely to distinguish them in their relation of *upper* and *lower*.

The Satellites are in the superior parts of their orbits, or have Jupiter between them and the Earth, when they are moving from West to East, or towards the *right-hand* of the page; but they are in the inferior parts of their orbits, or between the Earth and Jupiter, when they are moving from East to West, or towards the *left-hand*: in the former case Eclipses and Occultations occur, and in the latter Transits of the Satellites and their Shadows.

If an inverting telescope be directed towards Jupiter on March 17, 1837, at 11^h Mean Time, the Satellites will appear to an observer at Greenwich in the positions as laid down in the Table. The 4th Satellite, which is *really* to the left of the Planet, will appear to the right of it; and the 1st, 2nd, and 3rd, which are *really* to the right, will appear to be to the left.

West and *East*, at the head of the page, are inserted to show the positions of the Satellites with respect to Jupiter, as they would appear in a telescope that does

invert. Jupiter being always to the South of the zenith of Greenwich, the Satellites which are here laid down on the left of Jupiter would appear to the *West*, and those on the right-hand to the *East* of the planet.

As regards their positions to the east or west, the page viewed directly, exhibits the Satellites in an inverted order; but if the leaf be turned over, and the page viewed from the other side, they will appear in their real positions. The simplest mode of changing the position of a Satellite from apparent to real, and *vice versâ*, is to draw a line from the Satellite through Jupiter's centre, and to place the Satellite on this line at the same distance from the centre as before, only on the opposite side. If this operation be performed upon the Configurations as laid down in this page, the Satellites will be reduced to their real positions.

As the Configurations are given for *Mean Astronomical time*, which agrees with *Civil time* only from 0^h to 12^h, or from noon to midnight, when the time exceeds 12^h excess will indicate the Civil time of the succeeding day of the month.

Thus in September, 1837, the Configurations are given for 16^h 45^m mean time, but the 16th hour from noon is the same as the 4th hour from the following midnight, when a new Civil day has commenced. The appearances, therefore, relate to 4^h 45^m of the day following, according to the common mode of reckoning time; that is,

Configurations at 16^h 45^m on September the 26th relate to 4^h 45^m A.M. on September the 27th.

The Configurations enable an observer to distinguish the Satellites from each other, and from Stars in the vicinity of Jupiter.

Page XX. of each Month.

Eclipses of the Satellites of Jupiter.

On this page are given the Mean and Sideréal Times of the Eclipses of the Satellites, together with diagrams exhibiting the position of each Satellite with respect to the body of the Planet at the moment of Immersion or Emersion, as it will appear in an inverting telescope. These diagrams have been laid down from calculations made for the eclipse nearest to the middle of each month; but they will serve very well for the whole of the month, *except near opposition*, the change in the position of Jupiter and the Shadow in the interval being too small to be appreciable by the eye, as is evident by comparing the Phases for any two successive months. All the Eclipses which happen when Jupiter is 8° *above*, and the Sun 8° *below* the horizon of Greenwich, are marked with an asterisk to indicate that they are visible at that place; some which are even within these limits have been also marked, as, under favourable circumstances, they may sometimes be observed.

The Immersion (Im.) denotes the instant of the disappearance of the Satellite, by its entering into the shadow of Jupiter; and the Emersion (Em.) the instant of its re-appearance at coming out of the shadow. They generally happen when the Satellite is at some distance from the body of Jupiter, except near the opposition of Jupiter to the Sun, when the eclipse takes place near to the body of the planet. Before opposition, the Immersions and Emersions happen on the Western side, but after opposition on the Eastern side, of the planet: With an inverting telescope, however, the appearances will be directly the contrary. Before the opposition, the Immersions of the first Satellite are visible; and after the opposition, the Emersions only. It is seldom, also, that the Immersion and Emersion of the second Satellite can be observed at the same eclipse; but both phenomena are generally visible with the third and fourth Satellites.

To find the time at which the Immersion or Emersion of any of the Satellites will take place under any other meridian than that of Greenwich, it is merely necessary to add the difference of longitude (*in time*) to the time of the phenomenon at Greenwich, if the meridian be *east* of Greenwich, or to subtract if it be *west*, and the sum or difference will be the time required. But this determines only the instant of the occurrence of the phenomenon: Jupiter may be below the horizon at this time; or he may be above it, and the intensity of sun-light, or even the brightness of twilight, may be such as to render the Satellites invisible. To have the Eclipses visible, it has generally been considered that the Sun should be at least 8° below the horizon, and Jupiter not less than 8° above it at the same time. Adopting these limits, it is then necessary to ascertain the position of the Sun and Jupiter, with respect to the horizon, at the time of the phenomenon. This may be readily accomplished by means of a celestial globe, or near enough for the purpose, by finding the times of rising and setting of the objects, with the assistance of a table of semidiurnal arcs.

The Eclipses of Jupiter's Satellites, especially of the first, afford us, perhaps, the readiest means of determining the longitude; all that is necessary to be known being the exact time of observation: the difference between this time and the time at Greenwich, shows the difference of longitude at once, and it is *east* or *west* of Greenwich according as the time of observation is *greater* or *less* than the Greenwich time.

Suppose the Immersion of Jupiter's first Satellite to be observed, on January 2, 1837, at Paris at $7^{\text{h}} 5^{\text{m}} 2^{\text{s}}.7$ Mean Time at that place; by reference to page XX, it appears that the Immersion will take place at Greenwich at $6^{\text{h}} 55^{\text{m}} 41^{\text{s}}.2$ Greenwich Mean Time; the difference, $9^{\text{m}} 21^{\text{s}}.5$, is the difference of longitude between Greenwich and Paris; and, because the Paris time is greater than that at Greenwich, we infer that Paris is to the east of Greenwich.

Independent of defects in the tables, there are difficulties attending the observation of these phenomena which unfit them for *accurate* determinations of longitude. Different telescopes give different results; and care should be taken to have recourse to those corresponding observations which have been made under circumstances the most similar, and particularly with telescopes of the same quality and power. When extreme accuracy is not required, the Eclipses of the Satellites will always afford a good approximation towards the difference of meridians, and observations of them should on no account be neglected, especially when the Immersion and Emersion of the same Satellite are both visible.

Page XXI. of each Month.

Approximate Sidereal Times of the Occultations of Jupiter's Satellites by Jupiter, and of the Transits of the Satellites and their Shadows over the Disc of the Planet.

These phenomena are inserted in order to apprise Astronomers when they are about to happen, as observations of them may tend to improve the Tables of the Satellites. The instruments required to observe them with any thing like precision will preclude the possibility of their ever becoming available at sea. The times are given in days, hours, and minutes; the day being supposed to commence at mean noon, and the hours and minutes representing sidereal time, such as will be shown by a sidereal clock on that day.

The Phenomena for each Satellite are arranged under three distinct heads, and each in the order of the days of the month, so that an inspection of the columns opposite to each Satellite is necessary to determine what phenomena will happen on a given day.

Where an asterisk is annexed to the day of the month, it signifies that the pheno-

menon is visible at Greenwich, the limits of visibility being the same as those adopted for the eclipses.

In the month of March, 1837, under the general heading "Occultations," opposite to Satellite I, and under Immersion, the first quantity recorded is $1^{\text{d}} 14^{\text{h}} 32^{\text{m}}$, which signifies that at $14^{\text{h}} 32^{\text{m}}$ sidereal time on March the 1st an Immersion of the 1st Satellite takes place, and that it is visible at Greenwich. Under Emersion we find, for the whole of the month, "In the shadow," which signifies that the Emersion of the Satellite cannot be seen, because, although it ceases to be occulted by the body of the Planet, it is still involved in its shadow, from which it does not indeed escape until $17^{\text{h}} 29^{\text{m}} 45^{\text{s}} \cdot 8$ sidereal time. (See Eclipses of the Satellites of Jupiter on the preceding page of the month.) Again, in the column of Occultations opposite to Satellite III, it appears that the 3rd Satellite is occulted on the 19th day of the month; that it disappears behind the disc of the Planet at $19^{\text{h}} 58^{\text{m}}$, reappears at $23^{\text{h}} 42^{\text{m}}$, Sidereal time; and that neither the Immersion or Emersion are visible at Greenwich.

In the column headed Transits of Satellites, the first transit of Satellite I. at Greenwich appears to be on the 2nd day, when the Ingress takes place at $11^{\text{h}} 52^{\text{m}}$, and the egress at $14^{\text{h}} 12^{\text{m}}$, Sidereal time; that is, it comes into contact with Jupiter's disc at $11^{\text{h}} 52^{\text{m}}$, remains on the disc $2^{\text{h}} 20^{\text{m}}$, and quits it again at $14^{\text{h}} 12^{\text{m}}$, sidereal time; both the phenomena are visible at Greenwich.

The Transits of Shadows are to be interpreted in a similar manner.

Page XXII. of each Month.

1. *Logarithms of A, B, C, D, for correcting the Places of the Fixed Stars.*

In the formulæ which express the relation of the apparent place of a Star to its mean place, and reciprocally, there are certain factors which are independent altogether of the Star's place, and are therefore common to all Stars. These factors depend upon the longitudes of the Sun, Moon, and Moon's ascending Node.

The Logarithms here given are the logarithms of these independent factors, conveniently arranged for incorporation with other terms depending upon each particular Star, according to the method recommended by Professor Bessel. They have been computed for Mean Midnight at Greenwich, according to the formulæ exhibited at page 365, omitting in C and D the terms depending on 2° .

In the form under which they now appear, they are chiefly used in conjunction with the Astronomical Society's Tables,* which contain the Logarithms of the remaining factors depending on the Star's place; and for the reduction of any Star in that Catalogue, they appear to afford every facility that can be desired.

Where, however, the apparent place of any Star, *not in the Astronomical Society's Catalogue*, is required, similar quantities to those must either be computed with reference to the particular Star, before we can use the A, B, C, D, or recourse must be had to other and independent means; such, for instance, as are afforded by the Table at pages 366 and 367, which serves equally for all Stars. The formulæ by which this Table has been constructed are given at page 365.

The following Examples will sufficiently illustrate the mode of using both the Tables.

* "New Tables for facilitating the Computation of Precession, Aberration, and Nutation of 2881 Principal Fixed Stars, together with a Catalogue of the same, reduced to January 1, 1830. Computed at the Expense and under the Direction of the Astronomical Society of London. To which is prefixed an Introduction, explanatory of their Construction and Application. By Francis Baily, Esq." London, 1827. 4to.

EXPLANATION.

Required the Correction ($\Delta \alpha$) of the Right Ascension and ($\Delta \delta$) of the Declination of γ Orionis (No. 648, *Ast. Soc. Cat.*), for Precession, Aberration, and Nutation, Greenwich Mean Midnight, on February 5, 1837.

1.—By the Astronomical Society's Constants and the Logarithms of A, B, C, D.

Mean α , Jan. 1, 1830	- - 5 ^h 16 ^m 1 ^s 00	Mean δ	- - - - - + 6 ^o 11 ⁱ 17 ^u 10
Seven Years Precession	- - + 22.47	Seven Years Precession	+ 26.76
Mean α , Jan. 1, 1837	- - 5 16 23.47	Mean δ	- - - - - + 6 11 43.86
Logarithms.		Logarithms.	
Nat. Nos.		Nat. Nos.	
a	+ 8.1069	a'	+ 9.5119
A	- 1.1359	A	- 1.1359
aA	- 9.2428	$a'A$	- 0.6478
b	+ 8.8184	b'	+ 8.3130
B	+ 1.1421	B	+ 1.1421
bB	+ 9.9605	$b'B$	+ 9.4551
c	+ 0.5065	c'	+ 0.5824
C	- 8.8726	C	- 8.8726
cC	- 9.3791	$c'C$	- 9.4550
d	+ 7.1395	d'	- 9.9920
D	- 0.8763	D	- 0.8763
dD	- 8.0158	$d'D$	+ 0.8683
$\Delta \alpha = + 0.489$		$\Delta \delta = + 2.940$	

2.—By the independent Constants.

For February 5, 1837, the Table at pages 366, 367, furnishes

$$f = -3^{\circ} 43'; g = +7^{\circ} 67'; G = 258^{\circ} 46'; h = +19^{\circ} 48'; H = 315^{\circ} 24'; i = -5^{\circ} 93'$$

$$\alpha \text{ (in time) converted} = 79 \ 6 \quad \quad \quad 79 \ 6$$

$$G + \alpha = 337 \ 52$$

$$H + \alpha = 34 \ 30$$

Logarithms.		Nat. Nos.		Logarithms.		Nat.	
f	- - - - -	$3^{\circ} 43'$					
g	+ 0.8848				+ 0.8848		
$\sin (G + \alpha)$	- 9.5761				- 9.5761		
$\tan \delta$	+ 9.0357				+ 9.0357		
	- 9.4968		0.31		+ 0.8516		+ 7.0
h	+ 1.2896				+ 1.2896		
$\sin (H + \alpha)$	+ 9.7531				+ 9.7531		
$\sec \delta$	+ 0.0025				+ 9.0331		
	+ 1.0452		+ 11.10		+ 0.2387		+ 1.0
$\Delta \alpha$ (in arc) = + 7.36							
$\Delta \alpha$ (in time) = + 0.49							
					- 0.7731		
					+ 9.9975		
					- 0.7706		- 5.5
							$\Delta \delta = + 2.9$

$$\text{Hence the App. Right Ascens. of } \gamma \text{ Orionis} = 5 \ 16 \ 23.47 + 0.49 = 5 \ 16 \ 23.96$$

$$\text{And the Apparent Declination} = + 6 \ 11 \ 43.86 + 2.94 = + 6 \ 11 \ 46.80$$

2. *Mean Time of Transit of the First Point of Aries.*

The time in this column shows the distance of the *mean* Sun from the meridian, at the instant when the *true* point of intersection of the ecliptic and equator (called the first point of Aries) is on the meridian of Greenwich; and as the distance of the first point of Aries from the meridian, at the instant the mean Sun is on the meridian, is denominated Sidereal Time at Mean Noon, this may, by analogy, be termed the *Mean Time at Sidereal Noon*. It is the time which ought to be shown by a mean time clock adjusted to the Greenwich meridian, at the moment that a clock, adjusted to sidereal time, indicates exactly $0^h\ 0^m\ 0^s$. The use of this column is to facilitate the reduction of sidereal to mean solar time, with the help of the Table of Time Equivalents, given at pages 490 and 491, of this volume, as has been already explained at page 502.

3. *Mean Equinoctial Time.*

Mean Equinoctial Time signifies the Mean Time elapsed since the instant of the Mean Vernal Equinox. The numbers in this column represent this time, at every Mean Noon, in Mean Solar days and fractional parts of a day; it is reckoned from the Mean Vernal Equinox of 1836, between January 1^d and March 22^d·221605, but after March 22^d·221605 from the Vernal Equinox of 1837; for the Equinoctial Year has been assumed, according to Bessel, (*Conn. des Temps*, 1831, Additions, page 154) equal to 365·242218 Mean Solar days; and as the Equinoctial Time corresponding to the Mean Noon of March 22, 1837, is 365^d·020613, it is evident that the Equinoctial Year of 1836-7 was completed, and that a new year commenced, at 0^d·221605 after Mean Noon of the 22nd.

The fraction of the day at the head of the column is common to all the days of the Equinoctial Year. Thus, at Mean Noon of January 19, 1837, the Equinoctial Time is 303^d·020613, and on January 20 it is 304^d·020613, and so on until March 22^d·221605, when the year terminates, and the fractional part of the day changes. At Mean Noon of March 23, 1837, the Equinoctial Time is 0^d·778395, and this fraction is to be annexed to all the numbers in the column of days, from the period of the change until the equinox of 1838.

At the instant the Mean Sun arrives at the Mean Vernal Equinox, it must also be on *some* meridian, and this meridian will then have its Equinoctial time corresponding with its Mean Solar time, each of which will be $0^h\ 0^m\ 0^s$, and they will continue to correspond throughout the Equinoctial Year. At the end of the Equinoctial Year, the Sun will have passed this meridian 365 times, and have performed, besides, a certain portion of its 366th diurnal revolution, viz. 0^d·242218; it will, therefore, have arrived at *some* other meridian, which will now, in its turn, reckon the Mean Equinoctial and Mean Solar time from the same point, and remain constant for the year. Thus the meridian, from which the time is reckoned, is shifting its position at the end of every year by 0^d·242218, or 5^h 48^m 47^s·64, to the Westward. Between the Vernal Equinoxes of 1837 and 1838, this itinerant meridian corresponds to Longitude 0^d·778395 or 18^h 40^m 53^s·33 East of Greenwich.

This species of time was first introduced in the Supplement to the Nautical Almanac for 1828, with a very full explanation of its nature and use. It there appears, that the use of Equinoctial Time is to afford an uniform date, which shall be independent of the different meridians, and of all inequalities in the Sun's motion, and shall thus save the necessity, when speaking of the time of any event's happening, of mentioning

at the same time the place where it was observed or computed. Thus, it is the same thing to say that a comet passed its perihelion on January 5, 1837, at $5^h 47^m 0^s$, Mean Time at Greenwich; at $5^h 56^m 21^s.5$, Mean Time at Paris; or at $1836^y 289^d 6^h 16^m 40^s.96$ Equinoctial Time; but the former dates make the localities of Greenwich and Paris enter as elements of the expression; whereas the latter expresses the period elapsed since an epoch common to all the world, and identifiable independently of all localities. By this means all ambiguities in the reckoning of time are supposed to be avoided.

To convert Mean Solar into Equinoctial Time: To the corresponding Greenwich Mean Time add the Equinoctial Time at Mean Noon of the same day at Greenwich: the sum will be the Equinoctial Time required. Thus, in the instance of the comet before alluded to, Paris being $9^m 21^s.5$ East of Greenwich, subtract this from the Paris time and we get $5^h 47^m 0^s.0$ for the corresponding Greenwich Time, to which add $289^d.020613$, or $288^d 0^h 29^m 40^s.96$, the Mean Equinoctial Time at Greenwich Mean Noon of January 5, and the sum will represent the Mean Equinoctial Time of the Comet's passage of its perihelion, viz. $289^d 6^h 16^m 40^s.96$, from the vernal equinox of the year 1836.

4. Day of the Year.

The numbers in this column indicate the complete days at mean noon which have elapsed since mean noon of January 1. Mean noon of January 1 is therefore reckoned 0, and 1 is found opposite to that of January 2, because at that instant one entire day has elapsed.

5. Fraction of the Year.

These fractions are the quotients found by dividing the numbers in the preceding column by 365.25. The day and fraction of the year are useful in many Astronomical calculations.

Obliquity of the Ecliptic. (Page 266.)

The apparent inclination of the plane of the Ecliptic to that of the Equator is here given for every 10th day of the year, and continued to January 6 of the following year, marked December 37 for the sake of convenience. This inclination is ever varying, as well from the effect of its mean diminution, as of the nutation of the earth's axis: it is an important element in deducing the positions of the heavenly bodies, with reference to either of the planes, when we know their positions with respect to the other; as, for instance, in computing Right Ascensions and Declinations from Longitudes and Latitudes, and *vice versâ*. If the apparent Obliquity be required for any date not to be found in the Table, it may be obtained by simply taking the proportional part of the variation of the obliquity corresponding to the interval which comprises the given date. Thus, the apparent Obliquity on August 13, 1837, is $23^{\circ} 27' 46''.02$. For the variation of the Obliquity in the ten days between August the 9th and the 19th, is $0''.28$, or $0''.028$ for one day, and this being multiplied by 4, the number of days between the 9th and the 13th, gives $0''.11$, to be added to the Obliquity of August the 9th. For most purposes,

however, the Obliquity corresponding to the date in the Table nearest to the given date is sufficient, as is evident from an inspection of the quantities.

Sun's Horizontal Parallax. (Page 266.)

The Sun's Horizontal Parallax is the *greatest* angle under which the equatorial semidiameter of the earth would appear at the Sun's centre. It varies inversely as the distance, and the numbers in this column show the values for every tenth day of the year.

The Parallax serves for reducing a Solar observation made at the surface of the earth to what it would have been if made at the centre.

Sun's Aberration. (Page 266.)

The progressive motion of light, combined with the motion of the Earth in its orbit, causes the Sun to appear in a different position from that which he really occupies, the true position being always in advance of the apparent. The numbers in this column indicate, for every 10th day of the year, the amount of Aberration, or the quantity to be applied to the *true* longitude of the Sun to obtain the *apparent* longitude. The longitudes derived from the Solar Tables include Aberration, and are therefore *apparent* longitudes, such as are contained in this Ephemeris. If the *true* longitude of the Sun be wanted, as is the case in finding the longitude of the Earth for the calculation of the Geocentric place of a body, the aberration must be applied with a contrary sign. Thus, on June 9, 1837, at Mean Noon, by *adding* $20''.05$, the amount of aberration, to $78^{\circ} 21' 51''.9$, the apparent longitude of the Sun, we obtain $78^{\circ} 22' 11''.95$ for the true longitude.

Equation of the Equinoxes. (Page 266.)

The Solar and Planetary Tables furnish us with the places of the Heavenly Bodies referred to the Mean Equinox; but the true place of the Equinox at any time differs from its mean place, by a quantity which is termed the Equation of the Equinoxes; and the numbers here given show the value of the Equation for every 10th day of the year. They are to be applied, with their proper signs, to the Longitudes reckoned from the Mean Equinox, to obtain the values with respect to the True Equinox.

If the Longitude of a body be given with reference to the true Equinox, as in this Ephemeris, and it be required to find its Longitude reckoned from the Mean Equinox, the Equation of the Equinoxes must be applied with a contrary sign. Thus, the longitude of the Sun, reckoned from the true Equinox, on July 10, 1837, at Mean Noon, is $107^{\circ} 56' 3''.1$, and the Equation of the Equinoxes is $-7''.17$; therefore, applying it with the contrary sign, the sum $107^{\circ} 56' 10''.27$ is the Sun's Longitude from the *Mean* Equinox on that day.

The Equation corresponding to any date not contained in the Table, may be obtained in the usual way by interpolation.

The Equation of the Equinoxes in Right Ascension, in a similar manner, enables us to find the *apparent* point of intersection of the Ecliptic on the Equator; and is necessary in computing Sidereal Time.

Mean Longitude of ♄'s ascending Node. (Page 266.)

This column contains the Mean Longitude of the Moon's ascending Node, at Mean Noon of every 10th day of the year, reckoned from the Mean Equinox. The place for any intermediate day is easily found from the daily motion inserted at the foot of the column. The Longitude of the Node is necessary in the calculation of Nutation; it is also sometimes used to determine roughly the Stars which are likely to undergo occultation by the Moon.

Ephemeris of the Planets. (Pages 267 to 358.)

These pages contain the Geocentric and Heliocentric Places of the Planets, Mercury, Venus, Mars, Vesta, Juno, Pallas, Ceres, Jupiter, Saturn, and the Georgian.

The Geocentric Places are the places of the centres of the planets, as they would appear from the centre of the Earth; the Heliocentric, such as they would appear from the centre of the Sun.

The positions of the larger planets are given for Greenwich Mean Noon of every day in the year. But those of the smaller Planets are given only for every fourth day, except for the month preceding and following their oppositions, when they are given for Mean Midnight of each day. The Geocentric Right Ascensions and Heliocentric Longitudes, are reckoned from the True Equinox. The Geocentric Right Ascensions and Declinations are affected with aberration, and are therefore apparent positions.

By means of the positions of Venus, Mars, Jupiter, and Saturn, and particularly of Venus and Jupiter, which are frequently visible when the Sun is above the horizon, the Latitude, Time, and Variation of the Compass, may be found with nearly as much facility and accuracy as by the Sun.

The column headed "Meridian Passage" shows the Mean Time of the Planet's Transit over the meridian of Greenwich, and serves to find the Mean Time of Transit over any other meridian. As in the instance of the Moon before noticed, there are some days on which the planets do not pass the meridian; these are indicated by two asterisks (* *). If we refer to page 273, we shall find that Mercury does not pass over the Greenwich meridian on July 26th, and for a similar reason, viz., that the planetary day is here longer than the mean solar day, and commences so near, but previously, to the noon of the 26th, viz. $3^m \cdot 2$, as to want still $1^m \cdot 7$ of its completion at the termination of the 26th day. The planetary day, therefore, includes the solar day of July 26th: it begins *before* the solar day and ends *after* it, and the planet cannot arrive at the meridian at any period of it.

Another phenomenon takes place in the case of the planets, which, however, does not occur with the Moon; it is that of two transits on the same day, which arises from the planetary day being sometimes *shorter* than the solar day, commencing *after* and terminating *before* the solar day, and thus falling entirely within it. This cannot be the case with the Moon, because the lunar day is always greater than the solar day. When two transits occur, the times of both are registered, as at page 276, October 3rd, where it appears that Mercury passes the Greenwich meridian $3^m \cdot 4$ after Mean Noon of the 3rd, and again at $23^h \ 55^m \cdot 6$ on the same day, or $4^m \cdot 4$ before the arrival of the following Mean Noon.

The positions of the planets for any time not given in the Ephemeris, and under any other meridian than that of Greenwich, are to be found by interpolation in the usual way. *Example:* Required the Right Ascension and Declination of Jupiter at 6^h Mean Time of January 15, 1837, in longitude 30° west of Greenwich; also the time of Jupiter's passage over this meridian on the same day. The difference of longitude 2^h added (because it is west) to the given time, gives 8^h for the corresponding Greenwich time.

1. *For the Right Ascension.* The Right Ascension on January 15 is 9^h 12^m 27^s.44, and on January 16 it is 9^h 11^m 59^s.11; the difference 28^s.33 is the variation of the Right Ascension in 24 mean hours; therefore, 24^h : 28^s.33 :: 8^h : 9^s.44, the proportional part of the variation answering to 8^h; and this proportional part subtracted (because the Right Ascensions are decreasing) from 9^h 12^m 27^s.44, the Right Ascension at mean noon on January 15, gives 9^h 12^m 18^s.0 for the Right Ascension required.

2. *For the Declination.* The Declination on January 15 is N. 17° 4' 4^{''}.3, and on the 16th it is N. 17° 6' 21^{''}.3, the difference, 2' 17^{''}.0, is the variation in 24 hours; and the proportional part of this variation for 8^h is 45^{''}.7, which, added to the Declination at noon on the 15th, gives N. 17° 4' 50^{''}.0 for the Declination required.

3. *For the Meridian Passage.* Take the difference of the times of two consecutive transits; and considering this difference as an acceleration or retardation of the Meridian Passage while the planet has passed over 24^h of geographical longitude, take the proportional part of it, due to the difference of meridians, for a correction to be applied to the Meridian Passage at Greenwich, bearing in mind that in east longitudes the passage precedes that at Greenwich, when times are accelerated, and follows it, when they are retarded; and the contrary in west longitudes. In the present case Jupiter passes the meridian of Greenwich on January 15 at 13^h 31^m.0, and on January 16 at 13^h 26^m.6; the difference is 4^m.4, therefore 24^h : 4^m.4 :: 2^h : 0^m.4, the proportional part to be subtracted from 13^h 31^m.0, (because the passages are retarded, and the longitude is west of Greenwich,) which gives 13^h 30^m.6, mean time at the given place, for the Meridian Passage. Where great accuracy is not required, as in predicting the time of passage, in order to be prepared for observing the altitude of the planet on the meridian, for the determination of the latitude, this method will suffice.

Parallaxes and Semidiameters. (Pages 359 to 361.)

These are given for the noon of every 5th day of the year, and may be interpolated, if required for any intermediate day.

The Equatorial Horizontal Parallax is the *greatest* angle at the planet subtended by the equatorial semidiameter of the earth, and serves to find the Parallax in Altitude, Right Ascension, &c., for reducing an observation at the surface to the centre of the earth.

The Semidiameter is the angle subtended at the centre of the earth by the Semidiameter of the planet, and serves to reduce an observation of the limb to the centre, where only one limb of the planet has been observed.

Fixed Stars. (Pages 362 to 409.)

In pages 362 to 364 are given the mean Right Ascensions and Declinations of 100 principal fixed Stars for Jan. 1, 1837, together with their Annual Variations.

The *standard* Stars are distinguished by capital letters; North Declination by N, and South Declination by S.

The sign + prefixed to an Annual Variation of Right Ascension indicates that the variation is to be *added to*, and the sign —, that it is to be *subtracted from*, the Right Ascension: also, for Stars having North Declination, + signifies *add*, and — *subtract*: but for Stars of South Declination, + denotes that the Variation is to be *subtracted from*, and — that it is to be *added to*, the Declination.

Example 1. Required the Mean Right Ascension and Declination of α TAURI or Aldebaran on May 31, 1837. The Annual Variation of the Right Ascension is + 3".4264; the Fraction of the year corresponding to May 31, is .411 (page XXII. of May); the product of these numbers (1".408) is the proportional part of the annual variation due to the period elapsed since January 1, which *added*, because the sign is +, to the Mean Right Ascension on Jan. 1, viz., 4^h 26^m 34".492, gives 4^h 26^m 35".900, for the Mean Right Ascension on May 31. The Annual Variation of the Declination is + 7".949, which multiplied by .411 as before, and the product (3".27) *added*, because the sign is + and the Declination *North*, to the Mean Declination on Jan. 1, 1837, viz. N. 16° 10' 32".97, gives N. 16° 10' 36".24, for the Mean Declination required.

Example 2. Required the Mean Right Ascension and Declination of β URSÆ MINORIS on June 2, 1837. Here the Annual Variation of Right Ascension is — 0".2787, and the fraction of the Year .416 (page XXII. of June); the product (0".116) therefore being *subtracted*, because the sign of the Annual Variation is —, from 14^h 51^m 15".499, the Right Ascension on Jan. 1, gives 14^h 51^m 15".383, for the Right Ascension on June 2, 1837.

For the Declination, we have the Annual Variation = — 14".712, which, multiplied by .416, gives 6".12. The Declination being *North*, and the sign of the Variation —, this product must be *subtracted from* N. 74° 49' 18".32, and the result is N. 74° 49' 12".20.

Example 3. Required the Mean Declination of α SCORPII or Antares on May 31, 1837. The Annual Variation is — 8".519, and the fraction of the Year .411; the product of these numbers (3".50) being *added*, because the Declination is *South*, and the sign of the Variation —, to the Declination on Jan. 1, viz. S. 26° 3' 47".57, the sum, S. 26° 3' 51".07 is the Declination on May 31, 1837.

Next (page 365) follow Bessel's Formulæ of Reduction; and (pages 366 and 367) a Table for the Reduction of Stars, independently of the Astronomical Society's Constants, an example of which is given at page 512.

The apparent places of α and δ URSÆ MINORIS are given for every day of the year, and those of the remaining 98 Stars for every *tenth* day. They indicate the position which ought to be shown by perfect instruments at the time of the Star's transit over the meridian of Greenwich; and, therefore, supposing the catalogue of mean places to be correct, they serve to detect any errors of the instruments.

The hours and minutes of Right Ascension, and the degrees and minutes of Declination, are placed at the heads of the columns as constants, and belong equally to all the numbers below them. This arrangement has rendered it necessary,

in numerous instances, to continue the seconds beyond 60, as the width of the page would not permit of otherwise indicating any change in the minutes. Thus, the apparent Right Ascension of ϵ ORIONIS, at page 380, on December 17, 1837, is registered $5^h 27^m 60^s \cdot 67$, and is to be read $5^h 28^m 0^s \cdot 67$. Again, the Declination of ϵ Canis Majoris (page 382), on the same day, is registered S. $28^\circ 44' 69'' \cdot 62$, which signifies S. $28^\circ 45' 9'' \cdot 62$.

The small figures on the right hand of the vertical columns of seconds represent the differences of the quantities above and below them on the left, or the variation of Right Ascension and Declination in 10 days, and serve to find, by interpolation, the values for any intermediate day. As in the case of the Planets before explained, a Star will sometimes arrive at the meridian twice in one Mean Solar day. Wherever this occurs, an asterisk is placed opposite to the interval, and it signifies that the Star has passed the meridian 11 times in the 10 Mean Solar days, and consequently that the Right Ascension or Declination on any intermediate day is to be determined in these particular instances by taking $\frac{1}{11}$ th part, instead of $\frac{1}{10}$ th, for the daily variation in the interval. Thus, at page 385, we find in the instance of θ Ursæ Majoris, an asterisk opposite the interval between August 9 and 19, and a difference of $0^s \cdot 16$ opposite to the interval between the seconds belonging to those dates; we therefore infer that 11 transits have taken place, and that the daily variation of the Right Ascension is $0^s \cdot 015$.

When extreme accuracy is required, the apparent places of the 5 Polar Stars demand a further correction, depending on the terms which involve 2ϵ . The apparent places do not include these corrections, on account of the rapid variation of the argument, viz. about 26° in a day, but they are given in a Table at pages 408, 409, for every degree of the Moon's Longitude, and may be readily applied, agreeably to the precept at the foot of that Table.

Formulae for correcting for *daily* aberration are given in the Preface.

Moon-Culminating Stars. (Pages 410 to 451.)

Those Stars are denominated Moon-Culminating Stars, which being near the Moon's parallel of Declination, and not differing much from her in Right Ascension, are proper to be observed with the Moon, in order to determine differences of meridians. This is effected by comparing the differences of the observed Right Ascensions of such a Star and the Moon's bright limb at any two meridians. If the Moon had no motion, the difference of her Right Ascension from that of the Star would be constant at all meridians; but in the interval of her transit over two different meridians, her Right Ascension will have varied, and the difference between the two compared differences will exhibit the amount of this variation, which added to the difference of the meridians shows the angle through which the westerly meridian must revolve before it comes up with the Moon; hence, and knowing the rate of her increase in Right Ascension, the difference of longitude may be easily obtained.

For the determination of this variation, recourse has hitherto been had to actual observations made at different meridians, because any errors in the computed places of the Moon and Stars are thereby avoided; and the places were formerly given merely with the view of indicating the times when the observations are to be made. In the present List, however, the Right Ascensions are given with every possible degree of accuracy, so that they may be considered, at least approximately, in the light of corresponding observations made at Greenwich, and be taken to represent the indications of the Greenwich instruments, the same as though they had

been actually observed. The traveller has thus an opportunity of rendering his observations immediately available for determining his longitude with constant accuracy.

The *Right Ascension of the Moon's bright limb* is given for the lower as well as the upper Culmination, i. e. being put to denote the *Lower Culmination*, and to the *Upper Culmination*; the former is also distinguished by *Italic letters*; the *Roman numerals* indicate the limb of the Moon with reference to its transit over the meridian. The *Right Ascension of the Moon's bright limb* is given for every day, with a view to the more accurate determination of its variation when required. The Moon's age at the time of her upper transit, to the nearest tenth of a day, is inserted in a parenthesis in the column containing the *Magnitudes of the Stars*.

The *Declinations* are given to the nearest minute, and are useful for pointing the instrument to the object.

The numbers in the column *Var. of ζ 's R. A. in 1 hour of Long.* represent the *Variation in Right Ascension of the Moon's Limb* during the interval of her transit over two meridians, equidistant from that of Greenwich, and one hour distant from each other. They have been deduced from the *Right Ascensions of the bright limb*, and therefore include the effect produced by the change of the semidiameter. They serve to determine the Longitude where the difference of meridians is not very great; but where this difference is considerable, and extreme accuracy is wanted, the variation in Right Ascension should be used which corresponds to the middle of the interval between the observations, which may be readily obtained by interpolation. They also serve to determine the *Right Ascension of the bright limb at its transit over any other meridian*. Thus: Multiply the difference of longitude between Greenwich and the given meridian, by the variation; and, according as the given meridian is east or west of Greenwich, subtract or add the product to the *Right Ascension at Greenwich*; the result will be the *Right Ascension of the bright limb at transit over the proposed meridian*. Example: On May 19, 1837, the *Right Ascension of the Moon's first limb* is $15^{\text{h}} 24^{\text{m}} 51^{\text{s}}.86$, at its upper transit at Greenwich, and the variation for one hour of longitude is $147''.21$: Required the *Right Ascension of the limb at its upper transit at Paris*. Paris is $9^{\circ} 21'.5$, or $0^{\circ}.156$, East of Greenwich; therefore, multiplying $147''.21$ by 0.156 , and subtracting the product $22''.96$ from $15^{\text{h}} 24^{\text{m}} 51^{\text{s}}.86$, we have $15^{\text{h}} 24^{\text{m}} 28^{\text{s}}.90$, for the *Right Ascension at Paris*.

Where an asterisk is placed opposite to a Star's name, it is intended to denote that the Star is favourably situated for observing its Declination along with that of the Moon in both hemispheres, with a view to the accurate determination of the Moon's Parallax.

The numbers in the column entitled *Sid. Time of ζ 's Sem. pass. mer.*, express the *Sidereal intervals* which the Moon's Semidiameter, at the time of transit at Greenwich, takes in passing the meridian, and therefore serve to determine the Transit of the centre from an observed Transit of either limb.

Occultations. (Pages 452 to 453.)

These pages contain a list of the Planets and Fixed Stars to the sixth magnitude inclusive, the Occultations of which by the Moon will happen when the objects are above the horizon of Greenwich, together with the Sidereal and Mean Times of the Immersions and Emersions, and the points on the circumference of the Moon's image, where the Star, viewed with a telescope that inverts, will disappear and reappear. By

"Angle from N. Point" is to be understood the arc included between the Star, when in contact, and the point of intersection of the limb with a circle passing through the North Pole and the centre of the Moon's image; and by "Angle from Vertex," the arc between the Star at contact and the point where a circle, passing through the zenith and the Moon's centre, intersects the limb; the angles in all cases being reckoned towards the right hand round the circumference of the Moon's image, as seen in an inverting telescope. These latter angles will be found very useful in observing Occultations of small stars with a telescope not mounted equatorially; and, for the observation of an Emersion, a knowledge of the angle is absolutely necessary to enable the observer to direct his attention to the point of the Moon's limb where the Star will reappear. In some instances, Occultations have been inserted which taking place in, or near to, the horizon of Greenwich, are not visible there, but may be visible at places not far distant from Greenwich.

Elements for facilitating the Computation of Occultations of certain Stars by the Moon.
(Pages 454 to 464.)

These pages contain, 1. The *Apparent* places, at Greenwich Mean Midnight, of the Fixed Stars to the sixth magnitude inclusive, the occultations of which will take place above the horizon at Greenwich.

2. The *Apparent* Places of *all* Stars to the fifth magnitude inclusive, the occultations of which will be visible at *some* part of the Earth.

3. The Greenwich Mean Time at which the Moon would, if viewed from the centre of the Earth, appear to have the same Right Ascension as the Star.

4. The difference of Declination and Position of the Moon, as it would appear with respect to the Star at the instant of Conjunction in Right Ascension.

5. The Parallels of Latitude *beyond* which the Star cannot be occulted by the Moon.

These Elements are useful in the calculation of an Occultation, for being referable to the Moon and Star, as seen from the centre of the Earth, they are independent of geographical position, and serve equally for all places. It is only necessary to apply the difference of longitude from Greenwich to the Greenwich Mean Time of conjunction, to find the time of conjunction at any other meridian; and it is this time to which the positions of the Moon and Star here given will equally correspond.

Thus, the position of the Moon and ν Geminorum, on Jan. 20, 1837, at $6^h 27^m 41^s$, Mean Time at Greenwich, is the position at $6^h 37^m 2^s.5$ Mean Time at Paris, because Paris is $9^m 21^s.5$ east of Greenwich.

By Limiting Parallels are to be understood those parallels of latitude beyond which an occultation cannot *possibly* be visible.

Suppose an observer situate at a star, and having the Moon between him and the Earth, and that he could see the Moon projected on the Earth's disc; he would observe it moving across the disc from west to east, covering a zone whose breadth would be equal to the apparent diameter of the Moon. Now, it is only within the limits of this zone that the Occultation of a Star by the Moon can be visible. To all the places through which the boundary lines pass, the Star will appear just to touch the Moon's limb; and that projected parallel of latitude, to which one of the boundary lines is a tangent, is one of the limiting parallels, while the intersection of the other boundary line with the circumference of the Earth's disc determines the other limiting parallel.

Limiting Parallels are useful to indicate whether at a given conjunction of a Star

with the Moon, the positions are likely to produce an occultation in a given latitude and thus to save considerable labour to the computer.

Thus, suppose from the times of conjunction, at page 457, it were required to prepare a list of Occultations for Greenwich, whose latitude is $51^{\circ} 28' 39''$. On looking down the column of Limiting Parallels we reject at once the first star, because the Limiting Parallels do not comprise the parallel of Greenwich. On April 22, we see that σ Scorpii may be occulted to all the parallels of latitude between 65° N. and 25° N., which include that of Greenwich; this Star would therefore be fixed upon for calculation if no other considerations existed to cause its rejection. We observe, however, that the conjunction takes place near to noon of the 23rd: the intensity of sun-light would therefore prevent its being seen, and it would be rejected in consequence. The next Limiting Parallels having Greenwich between them are 68° N. and 20° S., opposite to ψ^2 Aquarii, on April 29; but the time of conjunction is still unfavourable: we therefore pass on to η Virginis, on May 15. The time of conjunction in this instance, as regards sun-light, is favourable: if, therefore, on further inquiry, the Star be found to be above the horizon of Greenwich, we should commence the calculation. It will appear, on reference to May 15, page 452, that the occultation of this star is visible at Greenwich.

Phenomena. (Pages 465 to 471.)

Pages 465 to 467 contain all the particulars necessary for indicating the times, places, &c., on the Earth where the Eclipses of the Sun and Moon will be visible; also the Elements which have been used in the calculations.

On pages 468 to 471 are given the conjunctions in Right Ascension of the Planets with the Moon, with each other, and with certain Stars; also the times when the Planets are in those parts of their orbits most favourable for observation, with a view to the more accurate determination of their elements; and other notices, chiefly of use to the astronomer.

Saturn's Ring. (Page 472.)

On this page are given the quantities which enable us to determine the position of the Ring of Saturn, at intervals of 40 days throughout the year, and whether it be visible or not. The value of p shows the position of the minor axis of the Ring with respect to a circle of declination, those of a and b the Ring's apparent magnitude, and a comparison of those of l and l' its visibility or otherwise. For the plane of the Ring to be *visible*, it is necessary that the Sun and the Earth should be elevated on the same side of it, which is the case during the whole of 1837. The circumstances which determine the *invisibility* of the Ring are, 1st, when its plane passes through the centre of the Sun, or $l' = 0$; 2nd, when it passes through the centre of the Earth, or $l = 0$, and at this time b also $= 0$; 3rd, when the Sun and Earth are on different sides of the plane of the Ring, for the Earth in this case will have the unilluminated side of the Ring turned towards it.

Phases. (Page 473.)

This page contains two Tables, the first showing the *Mean Time of the greatest Libration of the Moon's Apparent Disc*; and the second, the *Illuminated portion of the Discs of Venus and Mars* at the middle of each month.

Opposition of Mars. (Pages 474 to 479.)

These pages contain an Ephemeris of Stars proper to be observed with Mars at the opposition in 1837, with a view to the determination of the parallax of that planet from corresponding observations of the differences of declination between the planet and stars made at observatories differing considerably in latitude, such as those in the northern and southern hemispheres.

The positions of Mars are the apparent geocentric places of the planet's centre at the times of its transits over the meridian of Greenwich, deduced from the ephemeris of the planet given in this volume.

The Mean Semidiameter of Mars and the Mean Horizontal Parallax of the Sun have been assumed as stated in the Preface.

The positions of the stars are their apparent places on the respective days. These stars are selected so that there may be always sufficient intervals of time between their transits and those of the planet to enable the observer to read off the divisions of the Circle or Micrometer; except in some cases when two objects, not distant above five or six minutes in declination from each other, will pass through the field, the telescope remaining fixed, and when their difference of declination may be obtained by means of a micrometer.

It is desirable that when both limbs of Mars cannot be conveniently observed on the same day, the northern limb should be observed on the odd days, and the southern limb on the even days of the month. This is denoted by the letters N. and S. inserted in the column of magnitudes.

α LEONIS (*Regulus*) should, if possible, be observed on every night when the planet is observed.

Those Astronomers who are possessed of good equatorial instruments may take repeated measures of the differences of declination between the selected stars and the planet on the same night, noting the times at which the observations are made.

The places of the stars have been taken from the following authorities:

γ Cancri, δ Cancri, and η Leonis, from Mr. Pond's Catalogue of 1112 Stars.

The Stars marked (*p*), (*w*), (*x*), (*A*), from Bessel's Observations, Zone 274; those marked (*h*), (*k*), (*l*), (*m*), (*n*), (*o*), (*q*), (*r*), (*s*), (*t*), (*y*), (*z*), and the Star N° 1141 of the *Astronomical Society's Catalogue*, from Zone 275; and those marked (*a*), (*b*), (*c*), (*d*), (*e*), (*f*), (*g*), (*i*), from Zone 278.

The Star marked (*u*), from the *Histoire Céleste Française*, pages 219, 221, and 332.

Tides. (Pages 480 to 483.)

The Mean Times of High Water at London Bridge are here given for every day of the year, on the assumption that the time of high water on full and change days, or

the *Establishment of the Port*, is $2^h 7^m$. The first high tide which happens after Mean Noon of any day is inserted in the 1st column, and the second in the 2nd column. Where a line (—) is inserted, it indicates that there is only one high tide on that day. Thus on February 16 there is only one high tide: it occurs at $11^h 46^m$, but the succeeding high tide does not take place until 22^m after mean noon of February 17.

The times of high water at full and change of the Moon, as given at pages 482 and 483, are reckoned from *Apparent Noon*: They represent the *Establishments of the Ports*, that is, the *actual times of High Water when the Moon passes the meridian at the same time as the Sun*; or the *intervals between the times of Transit of the Moon and the times of High Water on full and change days*. They serve to determine the time of high water on any other day at those places in the usual manner. The time of high water, however, at any of the places contained in this table, may be deduced for every day from the time of high water at London Bridge, by taking the difference between the *establishment of the port* at each of these places, and the *establishment of the port* at London Bridge, viz. $2^h 7^m$, and considering this as a constant quantity, representing the difference of the tides between London Bridge and the place, to be *added to*, or *subtracted from*, London Bridge tides, according as the establishment of the port at the place is *later* or *earlier* than that at London Bridge. Thus the establishment of the port at Aberdeen is $0^h 45^m$, and at London Bridge $2^h 7^m$; the difference is $1^h 22^m$, and the Aberdeen tide precedes that at London: therefore, by *subtracting* $1^h 22^m$ from the London Bridge tides, we obtain the Aberdeen tides in *mean time*. On February 19, 1837, the first high water at London Bridge occurs at $1^h 54^m$, which being diminished by $1^h 22^m$, gives $0^h 32^m$ for the corresponding tide at Aberdeen, and so for other places.

Table showing the Correction required on account of Second Differences in finding the Greenwich Time corresponding to a reduced Lunar Distance. (Page 484.)

The use of this Table has been sufficiently explained, by the Examples given at page 507.

Tables for determining the Latitude by Observations of the Pole Star out of the Meridian. (Pages 485 to 487.)

These Tables serve to determine the Latitude from an observation of the Altitude of the Pole Star out of the Meridian. The method of using them is as follows:

From the observed altitude, when corrected for the error of the instrument, refraction, and dip of horizon, subtract $1'$.

Reduce the Mean Time of Observation at the place to the corresponding Sidereal Time, by the Table given at pages 488 and 489. (See *Tables of Time Equivalents*, following this article.)

With the Sidereal Time found, take out the *first correction*, with its proper sign. If the sign be +, the correction must be *added* to the reduced altitude; but if it be —, it must be *subtracted*: in either case the result will give an Approximate Latitude.

With this Approximate Latitude and the Sidereal Time of observation, take out the *second correction*, and with the day of the month and the same Sidereal time, take out the *third correction*. These two corrections *added* to the Approximate Latitude, will give the Latitude of the place.

Example: On March 6, 1837, in Longitude 37° W. at $7^{\text{h}} 43^{\text{m}} 35^{\text{s}}$ Mean Time, suppose the altitude of the Pole Star, when corrected for the error of the instrument, refraction, and dip of the horizon, to be $46^{\circ} 17' 28''$: Required the latitude.

Mean Time	-	-	-	-	-	-	^h	^m	^s
							7	43	35
Diff. Long. 37° in time	-	-	-	-	-	-	2	28	0
Greenwich Mean Time	-	-	-	-	-	-	10	11	35
Sidereal Time at Greenwich Mean Noon	-	-	-	-	-	-	22	56	2
Mean Time at Place	-	-	-	-	-	-	7	43	35
Acceleration (Tab. page 488) for $10^{\text{h}} 12^{\text{m}}$	-	-	-	-	-	-		1	41
Sidereal Time of Observation	-	-	-	-	-	-	6	41	18
Corrected Altitude	-	-	-	-	-	-	^o	[']	^{''}
							46	17	28
Subtract	-	-	-	-	-	-		1	0
							46	16	28
With Argument $6^{\text{h}} 41^{\text{m}} 18^{\text{s}}$, First Correction	-	-	-	-	-	-	0	8	19
							46	8	9
Arguments, 46°							} Second Correction		
$6^{\text{h}} 41^{\text{m}}$									
Arguments, March 6, 1837.							} Third Correction		
$6^{\text{h}} 41^{\text{m}}$									
Latitude of the place	-	-	-	-	-	-	N. 46	10	58

which differs only $2''$ from an actual trigonometrical computation.

The *Tables of Time Equivalents*, given at pages 488 to 491, are useful for converting Mean Time into Sidereal Time, and Sidereal into Mean Time, agreeably to the example annexed to each table. They will serve also for Tables of Acceleration and Retardation, by taking the difference between each argument and its equivalent. Thus, in the Table at pages 488 and 489, the *excess* of the sidereal time equivalents above the arguments of mean time show the *acceleration* of sidereal on mean solar intervals; and in the Table at pages 490 and 491, the *defect* of the mean time equivalents, as compared with the arguments of sidereal time, indicate the *retardation* of mean on sidereal intervals.

The concluding Table, at pages 492 to 496, contains the *Latitudes and Longitudes of the principal Observatories*. This Table has already been considerably improved, and will, it is hoped, be gradually perfected by communications, from each astronomer, of the latest and most accurate determination of his geographical position.

ERRATA AND NOTICES.

(Continued from page 542 of the *Nautical Almanac for 1835. Second Edition*
London, 1835.)

1.—NAUTICAL ALMANAC FOR THE YEAR 1835.

First Edition. (London, 1833.)

Page 452, April 12, SATURN,	Angles at Immersion, for	$\left\{ \begin{array}{l} 106^{\circ} \\ 130 \\ 193^{\circ} \end{array} \right\}$	read	$\left\{ \begin{array}{l} 117^{\circ} \\ 141 \\ 181^{\circ} \end{array} \right\}$
	Angles at Emersion, for	$\left\{ \begin{array}{l} 222 \\ 210 \end{array} \right\}$	read	$\left\{ \begin{array}{l} 297 \\ 321 \end{array} \right\}$
453, Aug. 27, SATURN,	Angles at Immersion, for	$\left\{ \begin{array}{l} 117^{\circ} \\ 141 \end{array} \right\}$	read	$\left\{ \begin{array}{l} 117^{\circ} \\ 141 \end{array} \right\}$
	Angles at Emersion, for	$\left\{ \begin{array}{l} 181^{\circ} \\ 210 \end{array} \right\}$	read	$\left\{ \begin{array}{l} 297 \\ 321 \end{array} \right\}$

Second Edition. (London, 1835.)

Page 452 } The above Errors in the *First Edition* are repeated and require
453 } same corrections.

532, *Fixed Stars*, second paragraph, for $\left\{ \begin{array}{l} + \\ - \end{array} \right\}$ read $\left\{ \begin{array}{l} N. \\ S. \end{array} \right\}$

2.—NAUTICAL ALMANAC FOR THE YEAR 1836.

(London, 1834.)

Page 68, Equation of Time, subtract $\left\{ \begin{array}{l} 0^{\circ} 10 \\ 0^{\circ} 08 \\ 0^{\circ} 06 \\ 0^{\circ} 04 \\ 0^{\circ} 02 \end{array} \right\}$ from the Equation on $\left\{ \begin{array}{l} \text{April 1} \\ \text{April 2, 3, 4} \\ \text{April 5, 6} \\ \text{April 7, 8, 9} \\ \text{April 10, 11, 12} \end{array} \right\}$

518, *Fixed Stars*, second paragraph, for $\left\{ \begin{array}{l} + \\ - \end{array} \right\}$ read $\left\{ \begin{array}{l} N. \\ S. \end{array} \right\}$

APPENDIX.

Page 67, line 13, for D read D₁

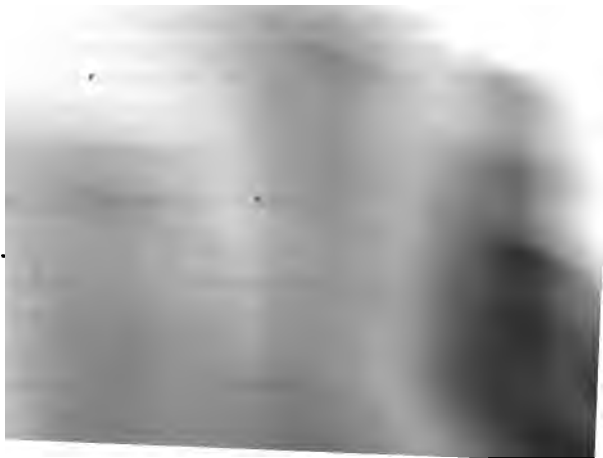
145, line 2, for i Leonis read i Leonis

3.—NAUTICAL ALMANAC FOR THE YEAR 1837.

Page 109, Satellite III. Diagram. The position of the Satellite at Immersion deficient in some Copies.

219, Satellite IV. Diagram. The letter i is deficient in some Copies

APPENDIX
TO THE
NAUTICAL ALMANAC FOR 1837.





ON THE CALCULATION
OF
THE PERTURBATIONS
OF THE
SMALL PLANETS AND THE COMETS OF SHORT PERIOD.

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[THE Author of the following paper wishes it to be understood that he lays no claim to novelty for any part of it. He has been induced to offer it to the Superintendent of the Nautical Almanac, by the hope that it may be useful to those who wish to study the theory of these remarkable bodies, or to effect the calculations connected with the prediction of their places; and by the belief that there does not exist in the English language any equivalent treatise.]

(1) THE smallness of the excentricities and inclinations of the orbits of the old planets, including Uranus, allows us to expand the expressions, on which their perturbations depend, in series proceeding by powers of the excentricities and inclinations, and therefore converging with considerable rapidity. The magnitude of the excentricities and inclinations of the four new planets, and more especially of the comets of short period, makes it difficult to form such expressions for the former and wholly impracticable for the latter. We are obliged here, therefore, to use a method which requires no expansion. While we thus give up all the elegance of mathematical theorems and all the facilities of tabulation, which mark so strikingly the usual planetary investigations, we are on the other hand perfectly secure against the loss of sensible quantities from imperfect development of the series, and even against the omission of terms depending on the second and all higher orders of the disturbing force.

SECTION I.

METHOD OF VARIATION

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NAUTICAL ALMANAC, 1837.—1

turbing forces, may be, still it is evident that its place and its motion at any given time may be represented by supposing it to be moving at that time, undisturbed, in an ellipse with certain elements. This ellipse we shall call the *instantaneous ellipse*. The dimensions and position of the instantaneous ellipse may be imagined by conceiving the disturbing force to cease entirely, and then conceiving the curve in which the body will proceed to move to be observed or calculated from the planet's velocity, and direction of motion, at the instant when the disturbing force ceases. The epoch, or mean longitude at a given previous time, will be found, by calculating backwards from the instant when the force ceases with the mean motion due to the orbit so determined. It is our object now to show how these elements may be determined for any given time, so that the calculation of the place and motion of the planet near that time may have precisely the same form as if the planet were moving in an undisturbed ellipse.

(3) The equations of motion give us only certain relations between the co-ordinates and the differential coefficients of the velocities in different directions. But from what has been said above, it will be readily inferred that the elements of the orbit can at every time be expressed by means of these co-ordinates and velocities at that time. Thus, by proper treatment, the equations of motion may be made to express the differential coefficients of the elements of the ellipse in which (as above) the planet's place and motion near that time are to be determined by the usual formulae. This gives only the momentary changes of the elements: a process equivalent to integration will then give us the total change that has taken place between any one time and any other time.

(4) Let μ be the Sun's mass, m_1, m_2, m_3 , &c. the masses of the disturbing planets (the masses being represented by the number of units of velocity which their action at the unit of distance would give in the unit of time), and for brevity let the letter m be used for the disturbed planet; also let x, x_1, x_2 , &c., y, y_1, y_2 , &c., z, z_1, z_2 , &c., be the co-ordinates of the disturbed and disturbing planets at the time t : x being measured from the Sun towards the first point of Aries (supposed invariable), y being measured towards the first point of Cancer (the plane of the ecliptic being supposed invariable), and z perpendicular to the plane of the ecliptic: let r, r_1, r_2 , &c. be the true radii vectores: also let a, e, ϖ, i, ν , be the mean distance, excentricity, longitude of perihelion, inclination, and longitude of node, of m at that time; n the mean angular motion (in the instantaneous ellipse) in one unit of time, measured in parts of radius: and let ϵ be the epoch of mean longitude of m , or the angle that must be added to nt , to form in the instantaneous ellipse what in an invariable ellipse is called the mean longitude; so that the place of m may be calculated at the time t , by supposing it to move in the ellipse whose elements are a, e, ϖ, i, ν , and supposing its mean longitude in that ellipse $= nt + \epsilon$. Then ϵ will be a variable quantity, like all the other elements. Let θ be the true longitude of m . The true longitude is supposed to be measured from the first point of Aries, along the ecliptic to the node, and then along the orbit to the place of m .

(5) The co-ordinates in (4) are all referred to the Sun. If the Sun's co-ordinates referred to a fixed point are X, Y, Z , those of m referred to the same point are $X+x, Y+y$, and $Z+z$. The consideration of the attractions produced by the different bodies on m and the Sun, (neglecting the attractions which m itself produces) gives us these equations—

$$\frac{d^2(X+x)}{dt^2} = -\frac{\mu x}{r^3} - \frac{m_1(x-x_1)}{\{(x-x_1)^2 + (y-y_1)^2 + (z-z_1)^2\}^{\frac{3}{2}}} - \frac{m_2(x-x_2)}{\{(x-x_2)^2 + (y-y_2)^2 + (z-z_2)^2\}^{\frac{3}{2}}} - \&c.$$

$$\frac{d^2X}{dt^2} = +\frac{m_1x_1}{r_1^3} + \frac{m_2x_2}{r_2^3} + \&c.$$

Taking the difference, and putting A for the sum of such quantities as

$$\frac{m_1}{\mu} \left\{ \frac{x-x_1}{\{(x-x_1)^2 + (y-y_1)^2 + (z-z_1)^2\}^{\frac{3}{2}}} + \frac{x_1}{r_1^3} \right\}$$

for all the different disturbing planets, we have

$$\frac{d^2x}{dt^2} = -\frac{\mu x}{r^3} - \mu A.$$

Similarly, putting B for the sum of such quantities as

$$\frac{m_1}{\mu} \left\{ \frac{y-y_1}{\{(x-x_1)^2 + (y-y_1)^2 + (z-z_1)^2\}^{\frac{3}{2}}} + \frac{y_1}{r_1^3} \right\}$$

and C for the sum of such quantities as

$$\frac{m_1}{\mu} \left\{ \frac{z-z_1}{\{(x-x_1)^2 + (y-y_1)^2 + (z-z_1)^2\}^{\frac{3}{2}}} + \frac{z_1}{r_1^3} \right\}$$

for all the different disturbing planets, we have

$$\frac{d^2y}{dt^2} = -\frac{\mu y}{r^3} - \mu B$$

$$\frac{d^2z}{dt^2} = -\frac{\mu z}{r^3} - \mu C$$

These are our fundamental equations.

(6) To discover the best method of combining these, we must, in conformity with the considerations of (3), express some of the elements in elliptic motion by means of

the co-ordinates and velocities of the planet. Now in elliptic motion $\frac{1}{a} = \frac{2}{r} - \frac{(\text{velocity})^2}{\mu} = \frac{2}{r} - \frac{1}{\mu} \left\{ \left(\frac{dx}{dt} \right)^2 + \left(\frac{dy}{dt} \right)^2 + \left(\frac{dz}{dt} \right)^2 \right\}$: consequently

ferring from the equations of (5) the variation of $\frac{2}{r} -$ we shall

have the variation of $\frac{1}{a}$. Also putting the unit of time by the radius vector, in undisturbed motion of this double area on the planes of $xy, yz, \&c$ $\cos \nu$;

but these projections are respectively $x \frac{dy}{dt} - y \frac{dx}{dt}$, $y \frac{dz}{dt} - z \frac{dy}{dt}$, $x \frac{dz}{dt} - z \frac{dx}{dt}$ therefore inferring from the equations of (5) the variations of these latter quantities we shall obtain the variations of $h \cos i$, $h \sin i \sin \nu$, and $h \sin i \cos \nu$. From these we shall obtain the variations of i , ν , and h : and since $h = \sqrt{\mu a (1 - e^2)}$, as the variation of a is already found, the variation of e will be found. The mean distance and excentricity being known, the place of perihelion is easily found, as there is but one place of perihelion which can give the proper values of r and $\frac{dr}{dt}$: and in like manner the epoch is found. This is the general outline of the method which shall follow.

(7) From the equations of (5) we obtain

$$2 \left(\frac{dx}{dt} \cdot \frac{d^2x}{dt^2} + \frac{dy}{dt} \cdot \frac{d^2y}{dt^2} + \frac{dz}{dt} \cdot \frac{d^2z}{dt^2} \right) = - \frac{2\mu}{r^3} \left(x \frac{dx}{dt} + y \frac{dy}{dt} + z \frac{dz}{dt} \right) \\ - 2\mu \left(A \frac{dx}{dt} + B \frac{dy}{dt} + C \frac{dz}{dt} \right)$$

$$\text{or } \frac{d}{dt} \left\{ \left(\frac{dx}{dt} \right)^2 + \left(\frac{dy}{dt} \right)^2 + \left(\frac{dz}{dt} \right)^2 \right\} = 2\mu \frac{d}{dt} \cdot \frac{1}{r} - 2\mu \left(A \frac{dx}{dt} + B \frac{dy}{dt} + C \frac{dz}{dt} \right)$$

$$\text{therefore } \frac{d}{dt} \left\{ \frac{2}{r} - \frac{1}{\mu} \left\{ \left(\frac{dx}{dt} \right)^2 + \left(\frac{dy}{dt} \right)^2 + \left(\frac{dz}{dt} \right)^2 \right\} \right\} = 2A \frac{dx}{dt} + 2B \frac{dy}{dt} + 2C \frac{dz}{dt}$$

or, as the quantity under the differential sign on the first side is $= \frac{1}{a}$,

$$- \frac{1}{a^2} \cdot \frac{da}{dt} = 2A \frac{dx}{dt} + 2B \frac{dy}{dt} + 2C \frac{dz}{dt}$$

$$\text{whence } \frac{da}{dt} = - 2a^2 \left(A \frac{dx}{dt} + B \frac{dy}{dt} + C \frac{dz}{dt} \right)$$

from which the variation of the semi-major axis of the orbit is found.

(8) Now the longitude of m from the node is $\theta - \nu$ (θ being measured as mentioned in (4)), and the co-ordinates of m parallel to the line of nodes, perpendicular to the line of nodes in the plane of the ecliptic, and perpendicular to the ecliptic, are therefore $r \cos (\theta - \nu)$, $r \sin (\theta - \nu) \cos i$, and $r \sin (\theta - \nu) \sin i$. From these we readily obtain

$$x = r \{ \cos (\theta - \nu) \cos \nu - \sin (\theta - \nu) \cos i \sin \nu \}$$

$$y = r \{ \sin (\theta - \nu) \cos i \cos \nu + \cos (\theta - \nu) \sin \nu \}$$

$$z = r \sin (\theta - \nu) \sin i$$

and hence

$$\frac{dx}{dt} = \frac{dr}{dt} \cdot \frac{x}{r} + r \frac{d\theta}{dt} \left\{ -\sin(\theta - \nu) \cos \nu - \cos(\theta - \nu) \cos i \sin \nu \right\}$$

$$\frac{dy}{dt} = \frac{dr}{dt} \cdot \frac{y}{r} + r \frac{d\theta}{dt} \left\{ \cos(\theta - \nu) \cos i \cos \nu - \sin(\theta - \nu) \sin \nu \right\}$$

$$\frac{dz}{dt} = \frac{dr}{dt} \cdot \frac{z}{r} + r \frac{d\theta}{dt} \cos(\theta - \nu) \sin i$$

These expressions, it is to be observed, are formed on the supposition that the elements are invariable; which is correct, because the motion in the actual part of the real orbit is the same as it would be in the instantaneous ellipse of that instant, supposing that ellipse to remain unvaried.

(9) Substituting these in the expression for $\frac{da}{dt}$,

$$\begin{aligned} \frac{da}{dt} = & -\frac{2a^2}{r} \cdot \frac{dr}{dt} (Ax + By + Cz) \\ & + 2a^2 r \frac{d\theta}{dt} \left\{ \begin{aligned} & A \left(\sin(\theta - \nu) \cos \nu + \cos(\theta - \nu) \cos i \sin \nu \right) \\ & + B \left(\sin(\theta - \nu) \sin \nu - \cos(\theta - \nu) \cos i \cos \nu \right) \\ & - C \cos(\theta - \nu) \sin i \end{aligned} \right\} \end{aligned}$$

which for brevity we shall write

$$-\frac{2a^2}{r} \cdot \frac{dr}{dt} A' + 2a^2 r \frac{d\theta}{dt} B'$$

The calculation of A' involves no difficulty; that of B' is rendered very easy by the use of two subsidiary constant angles, ψ and χ , where $\tan \psi = \tan \nu \cos i$, and $\tan \chi = \cot \nu \cos i$; whence

$$B' = A \frac{\cos \nu}{\cos \psi} \sin(\theta - \nu + \psi) + B \frac{\sin \nu}{\cos \chi} \sin(\theta - \nu - \chi) - C \sin i \cos(\theta - \nu).$$

(10) Since $r^3 \frac{d\theta}{dt} = h = \sqrt{\mu} \sqrt{a(1-e^2)}$, and $\sqrt{\mu} = na^{\frac{3}{2}}$,

$$\text{we have } r^3 \frac{d\theta}{dt} = na^3 \sqrt{1-e^2}$$

$$\text{or } r \frac{d\theta}{dt} = \frac{na^3}{r} \sqrt{1-e^2}$$

$$\text{Also } \frac{a(1-e^2)}{r} = 1 + e \cos(\theta - \omega)$$

$$\text{therefore } \frac{a(1-e^2)}{r^3} \cdot \frac{dr}{dt} = e \sin(\theta - \omega)$$

$$\text{and } \frac{a^3}{r} \cdot \frac{dr}{dt} = \frac{acr}{1-e^2} \sin(\theta - \omega)$$

Substituting these values in the expression of (9),

$$\frac{da}{dt} = -2 \frac{na^3e}{\sqrt{(1-e^2)}} \cdot \frac{\sin(\theta-\varpi)}{r} A' + 2na^4\sqrt{(1-e^2)} \frac{B'}{r}$$

(11) From the equations of (5) we find

$$x \frac{d^2y}{dt^2} - y \frac{d^2x}{dt^2} = \mu (Ay - Bx)$$

$$y \frac{d^2z}{dt^2} - z \frac{d^2y}{dt^2} = \mu (Bz - Cy)$$

$$x \frac{d^2z}{dt^2} - z \frac{d^2x}{dt^2} = \mu (Az - Cx)$$

or, by (6), since $x \frac{d^2y}{dt^2} - y \frac{d^2x}{dt^2} = \frac{d}{dt} \left(x \frac{dy}{dt} - y \frac{dx}{dt} \right)$, &c.

$$\frac{d}{dt} (h \cos i) = \mu (Ay - Bx)$$

$$\frac{d}{dt} (h \sin i \sin \nu) = \mu (Bz - Cy)$$

$$\frac{d}{dt} (h \sin i \cos \nu) = \mu (Az - Cx)$$

$$\begin{aligned} (12) \quad \frac{d\nu}{dt} &= \cos^2 \nu \frac{d \tan \nu}{dt} \\ &= \cos^2 \nu \frac{d}{dt} \cdot \frac{h \sin i \sin \nu}{h \sin i \cos \nu} \\ &= \frac{1}{h^2 \sin^2 i} \left\{ h \sin i \cos \nu \frac{d}{dt} (h \sin i \sin \nu) - h \sin i \sin \nu \frac{d}{dt} (h \sin i \cos \nu) \right\} \\ &= \frac{1}{h \sin i} \left\{ \cos \nu \frac{d}{dt} (h \sin i \sin \nu) - \sin \nu \frac{d}{dt} (h \sin i \cos \nu) \right\} \\ &= \frac{\mu}{h \sin i} \left\{ \cos \nu (Bz - Cy) - \sin \nu (Az - Cx) \right\} \\ &= \frac{\mu}{h \sin i} \left\{ A (-z \sin \nu) + B (z \cos \nu) + C (x \sin \nu - y \cos \nu) \right\} \end{aligned}$$

If we substitute for x and y the values in (8), we find

$$x \sin \nu - y \cos \nu = -r \sin(\theta - \nu) \cos i = -z \cot i$$

Therefore $\frac{d\nu}{dt} = \frac{\mu z}{h \sin^2 i} \left\{ -A \sin \nu \sin i + B \cos \nu \sin i - C \cos i \right\}$

Let $-A \sin \nu \sin i + B \cos \nu \sin i - C \cos i = C'$

Then, since $h = \sqrt{\mu} \sqrt{a(1-e^2)}$, and $n = \sqrt{\mu} a^{-\frac{3}{2}}$,

$$hn = \frac{\mu \sqrt{1-e^2}}{a}, \text{ and } \frac{\mu}{h} = \frac{an}{\sqrt{1-e^2}}$$

therefore $\frac{dv}{dt} = \frac{an}{\sqrt{1-e^2} \sin^2 i} z C'.$

$$\begin{aligned} (13) \quad \frac{di}{dt} &= \frac{1}{2} \cot i \cos^2 i \frac{d \tan^2 i}{dt} \\ &= \frac{1}{2} \cot i \cos^2 i \frac{d}{dt} \cdot \frac{(h \sin i \sin \nu)^2 + (h \sin i \cos \nu)^2}{(h \cos i)^2} \\ &= \mu \cot i \cos^2 i \left\{ \frac{h \sin i \sin \nu}{h^2 \cos^2 i} (Bz - Cy) + \frac{h \sin i \cos \nu}{h^2 \cos^2 i} (Az - Cx) \right. \\ &\quad \left. - \frac{(h \sin i \sin \nu)^2 + (h \sin i \cos \nu)^2}{(h \cos i)^2} (Ay - Bx) \right\} \\ &= \frac{\mu}{h} \left\{ \cos i \sin \nu (Bz - Cy) + \cos i \cos \nu (Az - Cx) - \sin i (Ay - Bx) \right\} \\ &= \frac{\mu}{h} \left\{ A (z \cos i \cos \nu - y \sin i) + B (z \cos i \sin \nu + x \sin i) \right. \\ &\quad \left. - C \cos i (x \cos \nu + y \sin \nu) \right\} \end{aligned}$$

On substituting the values of $x, y,$ and $z,$ from (8) this is changed to

$$\begin{aligned} &\frac{an}{\sqrt{1-e^2}} \left\{ A \left(-z \cot (\theta - \nu) \sin \nu \right) + B \left(z \cot (\theta - \nu) \cos \nu \right) \right. \\ &\quad \left. - C z \cot (\theta - \nu) \cot i \right\} \\ &= \frac{an}{\sqrt{1-e^2} \sin^2 i} z \cot (\theta - \nu) C' \\ &= \frac{an}{\sqrt{1-e^2}} r \cos (\theta - \nu) C' \end{aligned}$$

$$\begin{aligned} (14) \quad \frac{1}{h} \cdot \frac{dh}{dt} &= \frac{1}{2h^2} \cdot \frac{d(h^2)}{dt} \\ &= \frac{1}{2h^2} \cdot \frac{d}{dt} \left\{ (h \cos i)^2 + (h \sin i \cos \nu)^2 \right\} \\ &= \frac{\mu}{h^3} \left\{ h \cos i (Ay - Bx) + h \sin i \cos \nu (Az - Cx) \right\} \\ &= \frac{an}{\sqrt{1-e^2}} \left\{ A (y \sin i \sin \nu - x \cos i) \right. \\ &\quad \left. + \sin i \cos \nu \sin \nu \right\} \end{aligned}$$

Substituting the values of x , y , and z , from (8)

$$\begin{aligned} \frac{1}{h} \cdot \frac{dh}{dt} &= \frac{anr}{\sqrt{(1-e^2)}} \left\{ A \left(\sin(\theta-\nu) \cos \nu + \cos(\theta-\nu) \cos i \sin \nu \right) \right. \\ &\quad \left. + B \left(-\cos(\theta-\nu) \cos i \cos \nu + \sin(\theta-\nu) \sin \nu \right) - C \sin i \cos(\theta-\nu) \right\} \\ &= \frac{an}{\sqrt{(1-e^2)}} r B' \end{aligned}$$

And as $h = \sqrt{\mu} \sqrt{a(1-e^2)}$, we get

$$\begin{aligned} \frac{1}{h} \cdot \frac{dh}{dt} &= \frac{1}{2a} \cdot \frac{da}{dt} - \frac{e}{1-e^2} \cdot \frac{de}{dt} \\ \text{or } \frac{an}{\sqrt{(1-e^2)}} r B' &= -\frac{na^2e}{\sqrt{(1-e^2)}} A' \cdot \frac{\sin(\theta-\omega)}{r} \\ &\quad + na^2 \sqrt{(1-e^2)} \cdot \frac{B'}{r} - \frac{e}{1-e^2} \cdot \frac{de}{dt} \end{aligned}$$

whence

$$\frac{e}{1-e^2} \cdot \frac{de}{dt} = -\frac{na^2e}{\sqrt{(1-e^2)}} A' \cdot \frac{\sin(\theta-\omega)}{r} + \frac{na}{\sqrt{(1-e^2)}} \left(a^2(1-e^2) - r^2 \right) \frac{B'}{r}$$

$$\text{and } \frac{de}{dt} = -na^2 \sqrt{(1-e^2)} \frac{\sin(\theta-\omega)}{r} A' + \frac{na \sqrt{(1-e^2)}}{e} \left(a^2(1-e^2) - r^2 \right) \frac{B'}{r}$$

(15) Now $\frac{d(\log r)}{dt}$ is found by differentiating

$$\log r = \log a + \log(1-e^2) - \log \{1 + e \cos(\theta-\omega)\},$$

which represents the correct value of $\log r$, because by (2) and (4) the same expressions are to be taken to represent the place of m (using the elements of the instantaneous ellipse), as those which are employed in undisturbed elliptic motion (using the elements of the permanent ellipse). Still it is to be borne in mind that the elements vary from one instant to another; and therefore their variation must be

taken into account in forming $\frac{d(\log r)}{dt}$. Thus we have for $\frac{d(\log r)}{dt}$ the rigorous expression

$$\begin{aligned} \frac{d(\log a)}{dt} + \frac{d\{\log(1-e^2)\}}{dt} - \frac{d\{\log(1+e \cos(\theta-\omega))\}}{de} \cdot \frac{de}{dt} \\ - \frac{d\{\log(1+e \cos(\theta-\omega))\}}{d\omega} \cdot \frac{d\omega}{dt} - \frac{d\{\log(1+e \cos(\theta-\omega))\}}{d\theta} \cdot \frac{d\theta}{dt}. \end{aligned}$$

This expression, it is evident, has been obtained merely by considering that the place of m is always represented truly by the elliptic formulæ applied to the variable elements. But by (2) the motion of m is also to be represented truly by the elliptic formulæ for motion applied to the variable elements: and therefore generally the first differential coefficient with respect to t , of r or θ , or of any function of r or θ , must be

represented truly by the elliptic formulæ. Now the elliptic formula for $\frac{d \log r}{dt}$ is

$$-\frac{d \{ \log (1 + e \cos (\theta - \varpi)) \}}{d\theta} \cdot \frac{d\theta}{dt}$$

where $\frac{d\theta}{dt}$ is the same as in the former expression. Making the two expressions equal,

$$\begin{aligned} \frac{d(\log a)}{dt} + \frac{d \{ \log (1 - e^2) \}}{dt} - \frac{d \{ \log (1 + e \cos (\theta - \varpi)) \}}{de} \cdot \frac{de}{dt} \\ - \frac{d \{ \log (1 + e \cos (\theta - \varpi)) \}}{d\varpi} \cdot \frac{d\varpi}{dt} = 0. \end{aligned}$$

The reasoning of this article is general for any expression in terms of the co-ordinates of the place of m ; and its general result may be stated thus: The differential coefficient of any function of the *co-ordinates* (including polar co-ordinates) of m , taking those parts only which depend on the elements, is equal to zero. This would not be true if the *motion* of m entered into the function; for then the differential coefficient of the function would involve second differential coefficients of the co-ordinates, which, as in (5), have not the same form for undisturbed and for disturbed motion.

(16) The last equation is

$$\frac{1}{a} \cdot \frac{da}{dt} - \frac{2e}{1-e^2} \cdot \frac{de}{dt} - \frac{\cos(\theta - \varpi)}{1 + e \cos(\theta - \varpi)} \cdot \frac{de}{dt} - \frac{e \sin(\theta - \varpi)}{1 + e \cos(\theta - \varpi)} \cdot \frac{d\varpi}{dt} = 0$$

whence

$$\begin{aligned} \frac{d\varpi}{dt} &= \frac{1 + e \cos(\theta - \varpi)}{e \sin(\theta - \varpi)} \left(\frac{1}{a} \cdot \frac{da}{dt} - \frac{2e}{1-e^2} \cdot \frac{de}{dt} \right) - \frac{\cos(\theta - \varpi)}{e \sin(\theta - \varpi)} \cdot \frac{de}{dt} \\ &= \frac{1 + e \cos(\theta - \varpi)}{e \sin(\theta - \varpi)} \cdot \frac{2an}{\sqrt{1-e^2}} rB' + \frac{na^2 \sqrt{1-e^2}}{e} \Lambda' \frac{\cos(\theta - \varpi)}{r} \\ &\quad - \frac{na \sqrt{1-e^2}}{e^2} \left(a^2 (1-e^2) - r^2 \right) \frac{\cos(\theta - \varpi)}{\sin(\theta - \varpi)} \cdot \frac{B'}{r} \end{aligned}$$

The factor of B' in this expression

$$\begin{aligned} &= \frac{nar}{e^2 \sqrt{1-e^2} \sin(\theta - \varpi)} \left\{ 2e + 2e^2 \cos(\theta - \varpi) - \left\{ \left(\frac{a(1-e^2)}{r} \right)^2 - (1-e^2) \right\} \cos(\theta - \varpi) \right\} \\ &= \frac{nar}{e^2 \sqrt{1-e^2} \sin(\theta - \varpi)} \left\{ 2e + 2e^2 \cos(\theta - \varpi) \right. \\ &\quad \left. - \cos(\theta - \varpi) \{ 1 + 2e \cos(\theta - \varpi) + e^2 \cos^2(\theta - \varpi) - 1 + e^2 \} \right\} \\ &= \frac{nar}{e^2 \sqrt{1-e^2} \sin(\theta - \varpi)} \left\{ 2e \sin^2(\theta - \varpi) + e^2 \cos(\theta - \varpi) \right. \\ &\quad \left. - \sin^2(\theta - \varpi) \right\} \\ &= \frac{nar}{e^2 \sqrt{1-e^2} \sin(\theta - \varpi)} \left\{ 2e \sin^2(\theta - \varpi) - \sin^2(\theta - \varpi) \right\} \end{aligned}$$

the epoch, the element by which the body's place in the orbit is found for purpose let us consider that θ , the longitude at the time t , depends upon a , e , ω and ϵ , inasmuch as it is expressed by the series

$$nt + \epsilon + (2e + \&c.) \sin (nt + \epsilon - \omega) + \&c.$$

where $n = \sqrt{\mu a^{-3}}$. The reasoning of (15), applied to this instance we must have

$$\frac{d\theta}{da} \cdot \frac{da}{dt} + \frac{d\theta}{de} \cdot \frac{de}{dt} + \frac{d\theta}{d\omega} \cdot \frac{d\omega}{dt} + \frac{d\theta}{d\epsilon} \cdot \frac{d\epsilon}{dt} = 0$$

The values of $\frac{da}{dt}$, $\frac{de}{dt}$, $\frac{d\omega}{dt}$, have been found; we have therefore only the values of $\frac{d\theta}{da}$, $\frac{d\theta}{de}$, $\frac{d\theta}{d\omega}$, and $\frac{d\theta}{d\epsilon}$, and then the equation above will give

(18) For $\frac{d\theta}{da}$. Whatever be the definition of a differential coefficient, the rule for finding it is this: give to a the increment δa , and let the elements and the time be unaltered; find the increment $\delta\theta$ which this causes; then take the value to which $\frac{\delta\theta}{\delta a}$ approaches when δa is made indefinitely small. Now θ is found in terms of t by integrating this expression

$$\begin{aligned} \frac{dt}{d\theta} &= \frac{r^3}{h} \\ &= \frac{a^3(1-e^2)^2}{\{1+e \cos(\theta-\omega)\}^3} \times \frac{1}{\sqrt{\mu} \sqrt{a(1-e^2)}} \end{aligned}$$

If now we put $a + \delta a$ instead of a , $\frac{dt}{d\theta}$ becomes

$$\frac{a^{\frac{3}{2}}}{\sqrt{\mu}} \cdot \frac{(1-e^2)^{\frac{3}{2}}}{\{1+e \cos(\theta-\varpi)\}^3} + \frac{3}{2} \cdot \frac{a^{\frac{3}{2}}}{\sqrt{\mu}} \delta a \frac{(1-e^2)^{\frac{3}{2}}}{\{1+e \cos(\theta-\varpi)\}^3} + \text{higher powers of } \delta a :$$

and integrating,

$$t = \frac{a^{\frac{3}{2}}}{\sqrt{\mu}} f(\theta) + \frac{3}{2} \cdot \frac{a^{\frac{3}{2}}}{\sqrt{\mu}} \delta a (f(\theta) - \text{constant}) + \text{higher powers of } \delta a.$$

Putting $\theta + \delta\theta$ in the place of θ ,

$$t = \frac{a^{\frac{3}{2}}}{\sqrt{\mu}} f(\theta) + \frac{a^{\frac{3}{2}}}{\sqrt{\mu}} \cdot \frac{d.f(\theta)}{d\theta} \delta\theta + \frac{3}{2} \cdot \frac{a^{\frac{3}{2}}}{\sqrt{\mu}} \delta a (f(\theta) - \text{constant}) \\ + \text{higher powers and combinations of } \delta a \text{ and } \delta\theta.$$

Making this value of t equal to the former,

$$\frac{a^{\frac{3}{2}}}{\sqrt{\mu}} \cdot \frac{d.f(\theta)}{d\theta} \delta\theta + \frac{3}{2} \cdot \frac{a^{\frac{3}{2}}}{\sqrt{\mu}} \delta a (f(\theta) - \text{constant}) + \&c. = 0 ;$$

whence the limit of the value of $\frac{\delta\theta}{\delta a}$ is

$$= - \frac{3}{2a} \cdot \frac{f(\theta) - \text{constant}}{\frac{df(\theta)}{d\theta}} \\ = - \frac{3}{2a} \cdot \frac{\{1+e \cos(\theta-\varpi)\}^3}{(1-e^2)^{\frac{3}{2}}} (f(\theta) - \text{constant.})$$

To determine the constant, it is to be remarked, that from the beginning we have assumed that in the instantaneous ellipse, whatever changes it may undergo, $nt + \varepsilon$ is to represent the mean longitude: and therefore the variation of n (and consequently the variation of a on which n depends) must have t for a factor; and therefore its effect in $nt + \varepsilon$, and in θ which depends on $nt + \varepsilon$, must vanish when $t = 0$, or when $f(\theta) = 0$. From this we find,

$$\text{constant} = 0 :$$

$$\frac{d\theta}{da} \text{ or the limit of } \frac{\delta\theta}{\delta a} = - \frac{3}{2a} \cdot \frac{\{1+e \cos(\theta-\varpi)\}^3}{(1-e^2)^{\frac{3}{2}}} \cdot \frac{\sqrt{\mu}}{a^{\frac{3}{2}}} t \\ = - \frac{3}{2} na \sqrt{(1-e^2)} \frac{\{1+e \cos(\theta-\varpi)\}^3}{a^3 (1-e^2)^{\frac{3}{2}}} t \\ = - \frac{3}{2} na \sqrt{(1-e^2)} \frac{t}{r^3}.$$

The reader's attention is particularly invited to the circumstance, that in this investigation distinct reference is made to the assumption, that in the instantaneous ellipse the mean longitude is found by adding to the epoch the mean motion corresponding to that ellipse since $t = 0$.

19. For $\frac{d\theta}{de}$. Since, when the excentricity is e , t is found in terms of θ by integrating (with respect to θ)

$$\frac{a^{\frac{3}{2}}}{\sqrt{\mu}} \cdot \frac{(1-e^2)^{\frac{3}{2}}}{\{1+e \cos(\theta-\varpi)\}^3}$$

or

$$\frac{1}{n} \cdot \frac{(1-e^2)^{\frac{3}{2}}}{\{1+e \cos(\theta-\varpi)\}^3}$$

t will be found, when the excentricity is $e+\delta e$, by integrating

$$\frac{1}{n} \cdot \frac{(1-e^2)^{\frac{3}{2}}}{\{1+e \cos(\theta-\varpi)\}^3} - \frac{\sqrt{(1-e^2)}}{n} \cdot \frac{3e+2 \cos(\theta-\varpi)+e^2 \cos(\theta-\varpi)}{\{1+e \cos(\theta-\varpi)\}^3} \delta e + \text{high powers of } \delta e$$

(where the coefficient of δe is found merely by differentiating the preceding term with respect to e .)

Performing the integration, then, as far as possible,

$$t = \frac{1}{n} f(\theta) - \frac{\sqrt{(1-e^2)}}{n} \cdot \frac{\sin(\theta-\varpi) \{2+e \cos(\theta-\varpi)\}}{\{1+e \cos(\theta-\varpi)\}^3} \delta e + \text{higher powers of } \delta e + \text{constant} \times \delta e.$$

Now putting $\theta+\delta\theta$ instead of θ we have the corresponding value of $t =$

$$\frac{1}{n} f(\theta) + \frac{1}{n} \cdot \frac{d.f(\theta)}{d\theta} \delta\theta - \frac{\sqrt{(1-e^2)}}{n} \cdot \frac{\sin(\theta-\varpi) \{2+e \cos(\theta-\varpi)\}}{\{1+e \cos(\theta-\varpi)\}^3}$$

+ higher powers and combinations of $\delta\theta$ and δe + constant $\times \delta e$.

Supposing t , and all the elements except e unaltered, this value of t must be same as if θ and e had no variations, that is it must be $\frac{1}{n} f(\theta)$. Consequently

$$0 = \frac{1}{n} \cdot \frac{d.f(\theta)}{d\theta} \delta\theta - \frac{\sqrt{(1-e^2)}}{n} \cdot \frac{\sin(\theta-\varpi) \{2+e \cos(\theta-\varpi)\}}{\{1+e \cos(\theta-\varpi)\}^3} \delta e + \text{higher powers, \&c.} + \text{constant} \times \delta e$$

$$\begin{aligned} \text{whence } \frac{d\theta}{de} &= \frac{\sqrt{(1-e^2)}}{\frac{d.f(\theta)}{d\theta}} \cdot \frac{\sin(\theta-\varpi) \{2+e \cos(\theta-\varpi)\}}{\{1+e \cos(\theta-\varpi)\}^3} + \text{constant} \times \frac{n}{\frac{d.f(\theta)}{d\theta}} \\ &= \frac{\sin(\theta-\varpi) \{2+e \cos(\theta-\varpi)\}}{1-e^2} + \text{constant} \times \frac{n \{1+e \cos(\theta-\varpi)\}^3}{(1-e^2)^{\frac{5}{2}}} \end{aligned}$$

To determine the constant we must observe that in the elliptic expressions the e part of θ which depends on e is the equation of the centre; and that this is 0, its variation produced by a variation of e is 0, when $\theta-\varpi=0$; and therefore must have $0 + \text{constant} \times \frac{n(1+e)^3}{(1-e^2)^{\frac{5}{2}}} = 0$,

hence

constant = 0,

and therefore

$$\frac{d\theta}{de} = \frac{\sin(\theta - \omega) \{2 + e \cos(\theta - \omega)\}}{1 - e^2}.$$

(20) For $\frac{d\theta}{d\omega}$. As before, t is found by integrating (with respect to θ)

$$\frac{1}{n} \cdot \frac{(1 - e^2)^{\frac{1}{2}}}{\{1 + e \cos(\theta - \omega)\}^2}$$

when the longitude of perihelion is ω : and therefore when the longitude of perihelion is $\omega + \delta\omega$, t will be found by integrating

$$\frac{1}{n} \cdot \frac{(1 - e^2)^{\frac{1}{2}}}{\{1 + e \cos(\theta - \omega)\}^2} + \delta\omega \cdot \frac{d}{d\omega} \left(\frac{1}{n} \cdot \frac{(1 - e^2)^{\frac{1}{2}}}{\{1 + e \cos(\theta - \omega)\}^2} \right) + \text{higher powers of } \delta\omega.$$

From the manner in which θ and ω enter into the last term, it is evident that

$$\frac{d}{d\omega} \left(\frac{1}{n} \cdot \frac{(1 - e^2)^{\frac{1}{2}}}{\{1 + e \cos(\theta - \omega)\}^2} \right) = - \frac{d}{d\theta} \left(\frac{1}{n} \cdot \frac{(1 - e^2)^{\frac{1}{2}}}{\{1 + e \cos(\theta - \omega)\}^2} \right);$$

and therefore t will now be found by integrating, with respect to θ ,

$$\frac{1}{n} \cdot \frac{(1 - e^2)^{\frac{1}{2}}}{\{1 + e \cos(\theta - \omega)\}^2} - \delta\omega \cdot \frac{d}{d\theta} \left(\frac{1}{n} \cdot \frac{(1 - e^2)^{\frac{1}{2}}}{\{1 + e \cos(\theta - \omega)\}^2} \right)$$

or the value of t is

$$\frac{1}{n} f(\theta) - \delta\omega \cdot \frac{1}{n} \cdot \frac{(1 - e^2)^{\frac{1}{2}}}{\{1 + e \cos(\theta - \omega)\}^2} + \text{higher powers of } \delta\omega + \text{constant} \times \delta\omega.$$

Put $\theta + \delta\theta$ in the place of θ , as before; this becomes

$$\begin{aligned} \frac{1}{n} f(\theta) + \frac{1}{n} \cdot \frac{(1 - e^2)^{\frac{1}{2}}}{\{1 + e \cos(\theta - \omega)\}^2} \delta\theta - \frac{1}{n} \cdot \frac{(1 - e^2)^{\frac{1}{2}}}{\{1 + e \cos(\theta - \omega)\}^2} \delta\omega \\ + \text{constant} \times \delta\omega \\ + \text{higher powers and combinations of } \delta\theta \text{ and } \delta\omega. \end{aligned}$$

From this as in the former cases,

$$\begin{aligned} \frac{d\theta}{d\omega} &= 1 - \text{constant} \times \frac{n \{1 + e \cos(\theta - \omega)\}^2}{(1 - e^2)^{\frac{1}{2}}} \\ &= 1 - \text{constant} \times \frac{na^2 \sqrt{1 - e^2}}{r^2} \end{aligned}$$

To determine the constant, we have to observe that the only part for θ which depends on ω is the equation of the centre: and at

the equation of the centre is maximum, or its variation produced by a variation is nothing, when $r^2 = a^2 \sqrt{1-e^2}$; therefore

$$1 - \text{constant} \times n = 0$$

$$\text{or constant} = \frac{1}{n};$$

and therefore

$$\frac{d\theta}{d\omega} = 1 - \frac{a^2 \sqrt{1-e^2}}{r^2}$$

(21) For $\frac{d\theta}{d\varepsilon}$. Since $nt + \varepsilon$ is the corrected quantity which results from integration of $\frac{(1-e^2)^{\frac{3}{2}}}{\{1+e \cos(\theta-\omega)\}^2}$ we have

$$nt + \varepsilon = f(\theta);$$

and putting $\varepsilon + \delta\varepsilon$ for ε , and $\theta + \delta\theta$ for θ ,

$$\begin{aligned} nt + \varepsilon + \delta\varepsilon &= f(\theta) + \frac{d.f(\theta)}{d\theta} \cdot \delta\theta + \&c. \\ &= f(\theta) + \frac{(1-e^2)^{\frac{3}{2}}}{\{1+e \cos(\theta-\omega)\}^2} \delta\theta + \&c.; \end{aligned}$$

whence, as before,

$$\frac{d\theta}{d\varepsilon} = \frac{\{1+e \cos(\theta-\omega)\}^2}{(1-e^2)^{\frac{3}{2}}} = \frac{a^2 \sqrt{1-e^2}}{r^2}$$

(22) Now substituting all the values in the equation of (17),

$$\begin{aligned} & -\frac{3}{2} na \sqrt{1-e^2} \frac{t}{r^2} \times \left\{ -2 \frac{na^2 e}{\sqrt{1-e^2}} A' \frac{\sin(\theta-\omega)}{r} + 2 na^2 \sqrt{1-e^2} \right. \\ & + \frac{\sin(\theta-\omega) \{2+e \cos(\theta-\omega)\}}{1-e^2} \times \left\{ -na^2 \sqrt{1-e^2} \frac{\sin(\theta-\omega)}{r} A' \right. \\ & \quad \left. + \frac{na \sqrt{1-e^2}}{e} \{a^2 (1-e^2) - r^2\} \frac{B}{r} \right. \\ & + \left(1 - \frac{a^2 \sqrt{1-e^2}}{r^2} \right) \times \left\{ \frac{na^2 \sqrt{1-e^2}}{e} \cdot \frac{\cos(\theta-\omega)}{r} A' \right. \\ & \quad \left. + \frac{na}{e \sqrt{1-e^2}} r \sin(\theta-\omega) \{2+e \cos(\theta-\omega)\} B' \right\} \\ & + \frac{a^2 \sqrt{1-e^2}}{r^2} \cdot \frac{d\varepsilon}{dt} = 0 \end{aligned}$$

$$\begin{aligned} \text{From which } \frac{d\varepsilon}{dt} &= \left\{ -3 \frac{na^2 e}{\sqrt{1-e^2}} t \frac{\sin(\theta-\omega)}{r} + 2 na \right. \\ & \quad \left. + \frac{na^2 (1-e^2)}{e} \left(\frac{1}{\sqrt{1-e^2}} - 1 \right) \frac{\cos(\theta-\omega)}{r} \right\} A' \end{aligned}$$

$$\left\{ 3 n^2 a^2 \sqrt{1-e^2} \frac{t}{r} + \frac{na}{e} \left(\frac{1}{\sqrt{1-e^2}} - 1 \right) r \sin(\theta-\varpi) \{2+e \cos(\theta-\varpi)\} \right\} B'$$

(23) There remains but one point which requires attention. The variations of θ and ε are deduced exclusively from a consideration of the expressions for the projections of the small areas traced out in minute portions of time by the radius vector; as will be seen on examining (14) and (15). The variations, therefore, of θ and ε thus obtained are such as suppose longitude to be measured upon the constantly varying plane of the orbit, or rather upon successive portions of the orbit, a part of which is a continuous plane. But, for the purposes of astronomy, it is convenient to have longitude measured upon the ecliptic to the node of the actual orbit, and then on the actual plane of the orbit to the place of the body. It is evident that every small change in the place of the orbit will cause the longitude of any point (suppose the intersection of the old and new orbit) thus measured to undergo a change, dependent on the change in the place of the node, simply in consequence of our adopting this mode of measuring. Thus the longitude θ is composed of two parts, namely, ν on the plane of the ecliptic, and $\theta-\nu$ on the plane of the orbit: now, if the longitude of the node be increased by $\delta\nu$, a moment's consideration of the spherical triangles will show that the part of the longitude which is measured on the plane of the orbit is diminished by $\cos i \times \delta\nu$, and the longitude is now $(\nu+\delta\nu) + (\theta-\nu-\cos i \times \delta\nu)$, or $\theta + \delta\nu \times 2 \sin^2 \frac{i}{2}$: that is, the longitude, as we measure it, is to be increased by $2 \sin^2 \frac{i}{2}$ multiplied by every increase in the longitude

of the node. We must therefore add both to $\frac{d\varpi}{dt}$ and to $\frac{d\varepsilon}{dt}$,

$$2 \sin^2 \frac{i}{2} \times \frac{d\nu}{dt} \text{ or } \frac{an}{2 \sqrt{1-e^2} \cos^2 \frac{i}{2}} z C'.$$

(24) The element n (the mean motion) depends entirely upon a , whose variation has already been found: it may, however, be useful to give its variation separately. Since $n^3 a^3 = \mu$, we have

$$\begin{aligned} 2 n a^3 \frac{dn}{dt} + 3 n^2 a^2 \frac{da}{dt} &= 0, \text{ from which } \frac{dn}{dt} = -\frac{3}{2} \cdot \frac{n}{a} \cdot \frac{da}{dt} \\ &= \frac{3 n^2 a^2 e}{\sqrt{1-e^2}} \cdot \frac{\sin(\theta-\varpi)}{r} A' - 3 n^2 a^2 \sqrt{1-e^2} \frac{B'}{r} \end{aligned}$$

(25) Collecting, for convenience of reference, all the expressions that we have obtained, we have

$$\begin{aligned} \frac{da}{dt} &= -2 \frac{n a^2 e}{\sqrt{1-e^2}} \cdot \frac{\sin(\theta-\varpi)}{r} A' + 2 n a^2 \sqrt{1-e^2} \frac{B'}{r} \\ \frac{dn}{dt} &= 3 \frac{n^2 a^2 e}{\sqrt{1-e^2}} \cdot \frac{\sin(\theta-\varpi)}{r} A' - 3 n^2 a^2 \sqrt{1-e^2} \frac{B'}{r} \end{aligned}$$

$$\begin{aligned}
\frac{dt}{dt} &= \left\{ -3 \frac{n^2 a^2 e}{\sqrt{(1-e^2)}} t \frac{\sin(\theta-\varpi)}{r} + 2 na \right. \\
&\quad \left. + \frac{na^2(1-e^2)}{e} \left(\frac{1}{\sqrt{(1-e^2)}} - 1 \right) \frac{\cos(\theta-\varpi)}{r} \right\} A' \\
&+ \left\{ 3 n^2 a^3 \sqrt{(1-e^2)} \frac{t}{r} + \frac{na}{e} \left(\frac{1}{\sqrt{(1-e^2)}} - 1 \right) r \sin(\theta-\varpi) \right\} \{ 2 + e \cos(\theta-\varpi) \} \\
&\quad + \frac{na}{2 \sqrt{(1-e^2)} \cos^2 \frac{i}{2}} z C' \\
\frac{d\varpi}{dt} &= \frac{na^2 \sqrt{(1-e^2)}}{e} \cdot \frac{\cos(\theta-\varpi)}{r} A' \\
&+ \frac{na}{e \sqrt{(1-e^2)}} r \sin(\theta-\varpi) \{ 2 + e \cos(\theta-\varpi) \} B' + \frac{na}{2 \sqrt{(1-e^2)} \cos^2 \frac{i}{2}} \\
\frac{de}{dt} &= -na^2 \sqrt{(1-e^2)} \frac{\sin(\theta-\varpi)}{r} A' + \frac{na \sqrt{(1-e^2)}}{e} \left(a^2 (1-e^2) - \right. \\
\frac{dv}{dt} &= \frac{na}{\sqrt{(1-e^2)} \sin^2 i} z C' \\
\frac{di}{dt} &= \frac{na}{\sqrt{(1-e^2)}} r \cos(\theta-\nu) C'.
\end{aligned}$$

(26) Conceiving all these expressions integrated through the interval for which we require the variation of elements, and applying the integrals to the value of the elements at the beginning of the time, we shall have the values of the elements at the end of the time. Thus, suppose the elements so corrected to be $a', n', \epsilon', \varpi', e', \nu', i'$, we must calculate the place of the planet at the time T , just as if the planet had been moving, since $t = 0$, undisturbed in an elliptic orbit, and as if ϵ' were the mean longitude when $t = 0$, n' the mean motion since $t = 0$, and consequently $n'T + \epsilon'$ the mean longitude at the time T ; and we must calculate the other corrected elements as for undisturbed motion. If the integration be effected, this process would be absolutely rigorous.

(27) The first difficulty that occurs is this: that all the expressions involving the elements a, e, n , &c., as well as the co-ordinates r and θ , none of which can be calculated without a knowledge of the quantities whose values it is the object of the investigation to find. To this it is to be answered, that the elements may be varied so slowly that it is generally quite accurate enough to make the calculations with the values which they had at the beginning of the time; or, at any rate, the variations found from the formulæ have been used for a part of the time, to correct the elements, and use the new corrected elements for the calculation of the values in the next portion of time, &c. The next difficulty is, that, even in the case of the process that we have described, the expressions cannot be integrated. The method of obviating this difficulty will form the subject of the next section.

SECTION II.

METHOD OF QUADRATURES.

(27) In the preceding investigations, all angles and variations of angles are supposed to be expressed as circular arcs in parts of the radius. It is convenient for practical purposes to express them in seconds. For this purpose we have only to make $n = N \sin 1''$, $\frac{dn}{dt} = [N] \sin 1''$, $\frac{d\varepsilon}{dt} = [\varepsilon] \sin 1''$, $\frac{d\varpi}{dt} = [\varpi] \sin 1''$, $\frac{d\nu}{dt} = [\nu] \sin 1''$, $\frac{di}{dt} = [i] \sin 1''$; also $\frac{da}{dt} = [a]$, $\frac{de}{dt} = [e]$; and we obtain equations which give us $[N]$, $[\varepsilon]$, $[\varpi]$, $[\nu]$, $[i]$, $[a]$, and $[e]$: the five former being now expressed in seconds of arc, the sixth in terms of the unit of linear measure, and the seventh in terms of unity. These expressions, which are the differential coefficients with respect to the time, are, in fact, the actual variations (measured as we have just mentioned) which would take place in the unit of time, if the rates of variation remained uniform during one unit of time.

(28) The unit of linear measure and the unit of time in these expressions are absolutely arbitrary. For the unit of linear measure, it will be convenient to use that generally employed in astronomy, namely, the Earth's mean distance from the Sun. The choice of the unit of time will be thus determined: In the actual operation we must divide the whole time, for which the changes of the elements are to be investigated, into a number of equal parts, of perhaps ten days or twenty days each, which we shall call *intervals*: Now, it is convenient to take one interval for the unit of time. Then N is the number of seconds in the planet's mean motion during one interval; $[N]$, $[\varepsilon]$, $[\varpi]$, $[\nu]$, $[i]$, $[a]$, and $[e]$, are the variations of the respective elements during one interval (supposing the variations to go on uniformly during the whole interval) measured, the five first in seconds of arc, the sixth in parts of the Earth's mean distance from the Sun, and the seventh in parts of unity. The quantity t , which is the number measuring the quotient of the whole time up to any particular instant by the unit of time, must evidently be the ordinal number corresponding to that particular interval, or some number differing from that ordinal number by a quantity less than unity. The following considerations will show precisely what t must be.

(29) To obtain for the variation of each of the elements a quantity which *nearly* represents the true variation in one interval (leaving an error which is hereafter to be taken into account), it will evidently be best to make all our calculations with the co-ordinates, &c., calculated for the middle of each interval. We must for t (in the expression for $[\varepsilon]$) the value which it has for the middle of e

that is, for the first interval we must make $t = \frac{1}{2}$; for the

make $t = \frac{3}{2}$; and generally for the p^{th} interval we must

(30) We have now obtained expressions for the variations of the elements in an interval, which are adapted to use, and which are rigorously correct on the supposition that the rate of variation for the middle of each interval may be taken without error for the actual variation during that interval. We shall now show that the error of this supposition is to be taken into account.

(31) Take three successive numbers (the variation of a , for instance), and take their first-differences and second-difference, thus

	First-Diff.	Second-Diff.
$[a]_{p-1}$	$\Delta^{(1)}_{-1}$	
$[a]_p$	$\Delta^{(1)}_0$	$\Delta^{(2)}$
$[a]_{p+1}$		

Then assuming the three numbers $[a]_{p-1}$, $[a]_p$, $[a]_{p+1}$, to be represented by the formula

$$[a]_p + bx + cx^2,$$

where x is the time from the instant to which $[a]_p$ corresponds, we must make the formula represent $[a]_{p-1}$ on putting -1 for x (since the unit of time is the same as the interval,) and must make it represent $[a]_{p+1}$ on putting $+1$ for x . From this we easily find

$$b = \frac{1}{2} (\Delta^{(1)}_{-1} + \Delta^{(1)}_0)$$

and

$$c = \frac{1}{2} \Delta^{(2)}.$$

The formula $[a]_p + bx + cx^2$ will now represent with great accuracy all values of $[a]$ for the time $p + x$ where x is not greater than 1. Now, this is the quantity which we ought to integrate from $x = -\frac{1}{2}$ to $x = +\frac{1}{2}$, in order to get the true variation of a through the interval, for whose middle the quantity $[a]_p$ is calculated. The integral between these limits is

$$\begin{aligned} [a]_p \left(\frac{1}{2} + \frac{1}{2} \right) + \frac{b}{2} \left(\frac{1}{4} - \frac{1}{4} \right) + \frac{c}{3} \left(\frac{1}{8} + \frac{1}{8} \right) \\ = [a]_p + \frac{1}{24} \Delta^{(2)}. \end{aligned}$$

Thus we find, that for the true variation of a through one interval we ought to add $[a]_p$ to $\frac{1}{24}$ of the second-difference which stands opposite to it.

(32) When we calculate a long series of such quantities as $[a]_p$ and take their differences, it is evident that the second-differences, corresponding to the first and last terms, will be wanting: these, however, can be supplied by estimation (from observation of the others), and by means of these the first-differences preceding the first term and following the last term can be formed. Then the whole variation of a through the whole of the intervals is =

$$\begin{aligned}
 & \text{the sum of all the calculated quantities } [a] \\
 & + \frac{1}{24} \text{ the sum of all the corresponding second-differences} \\
 & = \text{the sum of all the calculated quantities } [a] \\
 & + \frac{1}{24} \left\{ \text{first-difference following last term—first-difference preceding first term} \right\}.
 \end{aligned}$$

It will easily be seen that, if we assume the third-differences to be sensible, their effects during one interval will destroy each other in the same manner as those of the first-differences: the only effects omitted are, therefore, those of the fourth-differences, which (except the intervals are extravagantly large) may be neglected. If, however, it is wished to take them into account, the expression is =

$$\begin{aligned}
 & \text{the sum of all the calculated quantities } [a] \\
 & + \frac{1}{24} \text{ the sum of all the corresponding second-differences} \\
 & - \frac{17}{5760} \text{ the sum of all the corresponding fourth-differences.}
 \end{aligned}$$

SECTION III.

PRACTICAL RULES FOR CALCULATION.

(33) Divide the time through which the variations of the elements are to be calculated into equal intervals. Experience alone can teach the calculator what will be the most advantageous length of the intervals: it will depend greatly upon the positions of the disturbing planets, especially Jupiter; but it is probable that, when Jupiter is nearest, intervals of 10 days each would not be found too long, and that at other times intervals of 20 days each might be safely used. It is desirable to retain the intervals of the same length through the whole of the time, even though the calculations at some parts should be made independently for only each alternate interval, and the others should be filled up by interpolation.

(34) All the calculations which follow are to be made for the interval. Thus, suppose the intervals were of 10 days each calculate the variations of elements in the 400 days between October 22, 1835, the calculations must be made for 1834, October 12, &c. In the following rules we shall express by the letter p : so that for September 22 (in this instance $p = 2$; for October 12, $p = 3$, &c.

On the Calculation of Perturbations.

(35) It is supposed that we know the planet's mean longitude at the beginning of the time, ϵ ; its mean distance from the Sun, a ; the number of seconds in its sidereal revolution, N ; its longitude of perihelion, ϖ ; its longitude of its ascending node, ν ; and the inclination of its orbit to the plane of the ecliptic, i . The mean longitude λ at the beginning of the time. The mean longitude λ and the longitude θ are supposed to be measured from the first point of Aries, λ in the ecliptic, to the node, and then upon the plane of the orbit. The planet's true longitude θ (measured as the others are measured) and its co-ordinates, x, y, z , (of which x is drawn from the Sun towards the first point of Aries, y towards the first point of Cancer, and z perpendicular to the plane of the ecliptic towards the north) must be calculated for the middle day of every interval. It is probable that an approximation in true longitude and $\frac{1}{5000}$ of the whole radius vector will be sufficient for the purpose. Experience will be the best guide on this point.

(36) The proportions $\frac{m_1}{\mu}, \frac{m_2}{\mu}$, &c., of the masses of the various disturbing planets to the Sun's mass are supposed to be known. The radii vectores r_1, r_2 , &c. and co-ordinates $x_1, y_1, z_1, x_2, y_2, z_2$, &c., of the various disturbing planets, and λ_1, λ_2 , &c. their distances from the disturbed planet, must be calculated for every middle day.

(37) The next step will be to calculate for every middle day the following quantities:—

$$A = \frac{m_1}{\mu} \left\{ \frac{x-x_1}{\lambda_1^3} + \frac{x_1}{r_1^3} \right\} + \frac{m_2}{\mu} \left\{ \frac{x-x_2}{\lambda_2^3} + \frac{x_2}{r_2^3} \right\} + \&c.$$

$$B = \frac{m_1}{\mu} \left\{ \frac{y-y_1}{\lambda_1^3} + \frac{y_1}{r_1^3} \right\} + \frac{m_2}{\mu} \left\{ \frac{y-y_2}{\lambda_2^3} + \frac{y_2}{r_2^3} \right\} + \&c.$$

$$C = \frac{m_1}{\mu} \left\{ \frac{z-z_1}{\lambda_1^3} + \frac{z_1}{r_1^3} \right\} + \frac{m_2}{\mu} \left\{ \frac{z-z_2}{\lambda_2^3} + \frac{z_2}{r_2^3} \right\} + \&c.$$

(38) Find the angles ψ and χ , where $\tan \psi = \tan \nu \cos i$, and $\tan \chi = \cot i$ (ψ and χ will therefore be constants): and calculate for every middle day the following expressions:—

$$A' = Ax + By + Cz$$

$$B' = A \frac{\cos \nu}{\cos \psi} \sin (\theta - \nu + \psi) + B \frac{\sin \nu}{\cos \chi} \sin (\theta - \nu - \chi) - C \sin i \cos (\theta - \nu)$$

$$C' = -A \sin \nu \sin i + B \cos \nu \sin i - C \cos i.$$

(39) Find the angle ϕ , such that $\sin \phi = e$ (ϕ is therefore constant), and calculate for each middle day the following expressions (where p , as before mentioned, is the ordinal number of the interval)

$$[a] = -\left(2 N \sin 1'' a^3 \tan \phi\right) \frac{\sin (\theta-\varpi)}{r} A' + \left(2 N \sin 1'' a^4 \cos \phi\right) \frac{B'}{r}$$

$$[N] = \left(3 N^2 \sin 1'' a^3 \tan \phi\right) \frac{\sin (\theta-\varpi)}{r} A' - \left(3 N^2 \sin 1'' a^3 \cos \phi\right) \frac{B'}{r}$$

$$[\varepsilon] = \left\{ -\left(3 N^2 \sin 1'' a^3 \tan \phi\right) \left(p - \frac{1}{2}\right) \frac{\sin (\theta-\varpi)}{r} + \left(2 N a\right) \right. \\ \left. + \left(N a^3 \cos \phi \tan \frac{\phi}{2}\right) \frac{\cos (\theta-\varpi)}{r} \right\} A'$$

$$+ \left\{ \left(3 N^2 \sin 1'' a^3 \cos \phi\right) \frac{p - \frac{1}{2}}{r} + \left(2 N a \frac{\tan \frac{\phi}{2}}{\cos \phi}\right) r \sin (\theta-\varpi) \right. \\ \left. + \left(N a \tan \phi \tan \frac{\phi}{2}\right) r \sin (\theta-\varpi) \cos (\theta-\varpi) \right\} B'$$

$$+ \left(\frac{N a}{2 \cos \phi \cos^2 \frac{i}{2}}\right) z C'$$

$$[\varpi] = \left(N a^2 \cot \phi\right) \frac{\cos (\theta-\varpi)}{r} A' + \left(\frac{2 N a}{\sin \phi \cos \phi}\right) r \sin (\theta-\varpi) B'$$

$$+ \left(\frac{N a}{\cos \phi}\right) r \sin (\theta-\varpi) \cos (\theta-\varpi) B' + \left(\frac{N a}{2 \cos \phi \cos^2 \frac{i}{2}}\right) z C'$$

$$[e] = -\left(N \sin 1'' a^3 \cos \phi\right) \frac{\sin (\theta-\varpi)}{r} A' + \left(N \sin 1'' a^3 \frac{\cos^2 \phi}{\sin \phi}\right) \frac{B'}{r} \\ - \left(N \sin 1'' a \cot \phi\right) r B'$$

$$[\nu] = \left(\frac{N a}{\cos \phi \sin^2 i}\right) z C'$$

$$[i] = \left(\frac{N a}{\cos \phi}\right) r \cos (\theta-\nu) C'.$$

The quantities within the large parentheses are constant.

(40) Collect the whole series of calculated quantities $[a]$, take the first-differences and second-differences, and supply by estimation a second-difference preceding the first and one following the last; and with these form a first-difference preceding the first $[a]$ and one following the last $[a]$. Then the sum of all t

$\frac{1}{24}$ of the excess of the last first-difference over the first

whole variation of a , in parts of the earth's mean diste
operations performed with respect to all the quantities $[i]$
give the whole variations of N , ε , ϖ , ν , and i , in

operations performed on all the quantities $[e]$ will give the whole variation of e in parts of unity. These whole variations we shall denote by the prefix δ .

(41) Now, the planet's place at and near the end of the time is to be calculated as if it were moving, undisturbed, in an elliptic orbit, whose mean distance $= a + \delta a$, excentricity $= e + \delta e$, longitude of perihelion $= \varpi + \delta \varpi$, longitude of node $= \nu + \delta \nu$, and inclination $= i + \delta i$: and its mean longitude in this orbit is to be calculated as if, at the beginning of the time, its mean longitude had been $\epsilon + \delta \epsilon$, and as if, from the beginning of the time, its mean sidereal motion had been $N + \delta N$ in every interval.

(42) If the planet's place is to be calculated for a considerable time before and after the day to which we have corrected the elements, it will not, perhaps, be sufficiently accurate to use one set of elements (though this is sufficient for the ordinary ephemeris for the opposition of a small planet). In that case it will only be necessary to terminate the summation of the quantities $[a]$, &c., at two or three different days, and to use the elements, thus corrected to two or three different days, for the calculation of places for times near to those days.

(43) If the change in the elements through the whole period appears to be great, the only method of making the calculation accurate will be, to sum the variations for a short time (as perhaps one half or one third of the whole period) and, correcting the elements, to use these corrected elements for the calculation of the co-ordinates and other quantities which are to be used in the calculation of the variations for the next part of the period. It is probable that this process will seldom be found necessary, except when the planet near its aphelion is acted on by powerful disturbing forces; a circumstance which occurs sometimes in the perturbations of ENCKE'S Comet.

(44) It is only necessary to add, that the formulæ above suppose the longitudes to be measured from an invariable line on an invariable ecliptic. To take account of the alteration in the ecliptic and the first point of Aries, the longitude of the node must be increased by

$$\text{general precession during the interval} - \text{diminution of obliquity during} \\ \text{the interval} \times \sin \nu \times \cot i;$$

the longitudes of the planet and its perihelion from the node must be increased by
diminution of obliquity $\times \sin \nu \times \operatorname{cosec} i$:

the complete mean longitude therefore of the planet, and longitude of its perihelion, must be increased by

$$\text{general precession} + \text{diminution of obliquity} \times \tan \frac{i}{2} \times \sin \nu.$$

And the inclination must be increased by

$$\text{diminution of obliquity} \times \cos \nu.$$

The true longitude, calculated with the elements thus further corrected and the mean sidereal motion, for any considerable interval before and after the day for which the elements are computed, must also be affected with precession proportional to that interval. If, however, in the process of calculating true longitudes, the motion of precession be added to the mean sidereal motion, and if the same motion of precession be applied to the longitudes of the node and perihelion (neglecting for short times the effect of change of obliquity) it will not be necessary to take account of precession afterwards.

G. B. AIRY.

OBSERVATORY, CAMBRIDGE,
Dec. 3, 1834.

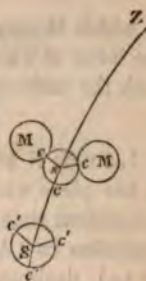
ON THE
DETERMINATION OF THE LONGITUDE
FROM AN
OBSERVED SOLAR ECLIPSE OR OCCULTATION.

BY W. S. B. WOOLHOUSE,
HEAD ASSISTANT ON THE NAUTICAL ALMANAC ESTABLISHMENT.

AN accurate observation of a Solar Eclipse, or Occultation of a Star by the Moon, furnishes a favourable opportunity for the calculation of the longitude. This calculation may be effected by various methods, most of which are well known to astronomers: amongst the most simple and practically useful may be noticed the method of the late Dr. Young, and the improvements on the same by Mr. Thomas Henderson, now Astronomer Royal of Scotland, (see *Nautical Almanacs* from 1827 to 1833, inclusive); also two methods by Mr. Edward Riddle, and another by Mr. Thomas Maclear, published in the *Memoirs of the Royal Astronomical Society*, vol. iv. pages 305 and 531. To obviate the difficulties in the way of the calculation, these methods, as, indeed, all others that have come within my observation, suppose in the first instance that the estimated Greenwich time will suffice to take out the Moon's declination accurately from the ephemeris; or that the motion of the Moon in her orbit is uniform throughout a wide interval of time; consequently, when a good result is to be obtained, and the error of the estimated longitude is considerable, the computer is generally obliged to repeat the calculation with more accurate data, deduced for the Greenwich time according to the calculated, instead of the assumed, longitude. A method well adapted to computation, and, in all cases, free from inaccuracy or roughness of approximation has long been wanted. The following brief discussion of the problem is submitted by way of continuation of my paper on Eclipses, which forms the Appendix to the *Nautical Almanac* for 1836, and has for its object an easy, practical, and, at the same time, a correct solution. It is proposed, also, to supersede the necessity of having recourse, in these calculations, to the elements usually printed in Occultation lists, the use of which materially augments the chances of inaccuracy; and furthermore, to reduce the processes of calculation, for an Occultation, to plain and simple rules for the use of those who may be unaccustomed to analytical formulæ.

In the case of an Eclipse of the Sun, the apparent time of observation being converted into arc, at the rate of 15° for an hour, will show the true hour-angle of the Sun's centre at that instant; and as the declination of the Sun is never subject to a very rapid daily variation, it may be taken out from the Ephemeris with tolerable accuracy by the approximate Greenwich time, deduced from an estimated longitude or a rough longitude by account.

In the annexed figure, let Z represent the position of the zenith, S the Sun and $c'c'e'$ his limb. To illustrate the principle and simplify the reasoning that enters into the present investigation, it will be convenient to imagine, merely by way of convention, the limb $c'c'e'$ of the Sun to be an apparent one as affected by a parallax equal to the relative parallax of the two bodies: on this supposition, let s be the true place and ccc the true appearance of the limb as it would be seen from the centre of the Earth. Then, by the theory of the effects of parallax, the true semidiameter Sc' of the Sun will represent the fictitious semidiameter sc as augmented by the parallax; and if any point c be taken in the fictitious limb ccc it will be transferred to a corresponding point c' on the true limb of the Sun; consequently, the true limb of the Moon M being brought in contact with this disc, the parallax will exactly reduce her apparent limb to a contact with the Sun's true limb $c'c'e'$. Moreover, as the hour-angle and declination of the Sun S are known at the time of observation, and as this position is now viewed as an apparent one, the effects of the parallax or, in other words, the calculation of the relative right ascension and declination of s and the diminished semidiameter sc follows directly from the equations (2) of my paper on Eclipses, page 103. The problem is thus reduced to the determination of the corresponding Greenwich time when the true disc of the Moon comes in contact with the given disc ccc placed at a given relative right ascension and declination; and every consideration relating to parallax is hence eliminated from the inquiry.



Assume,

α the right ascension
 h the hour-angle
 δ the declination
 σ the semidiameter
 α_0 the right ascension
 δ_0 the declination
 σ_0 the semidiameter

} of the true Sun S
 } of the fictitious Sun s

and D , the declination of the Moon.

Then,

$$\left. \begin{aligned} \Delta \alpha &= \rho P \frac{\cos l}{\cos \delta_0} \sin h \\ \Delta \delta &= \rho P \{ \sin l \cos \delta - \cos l \sin \delta \cos (h - \frac{1}{2} \Delta \alpha) \} \\ \alpha_0 &= \alpha + \Delta \alpha \\ \delta_0 &= \delta + \Delta \delta \end{aligned} \right\} \dots (a)$$

Or, following the method of resolution employed at page 104,

$$\left. \begin{aligned} \Delta \alpha &= \rho P \frac{\cos l}{\cos \delta_0} \sin h \\ (h) &= h - \frac{1}{2} \Delta \alpha \\ \tan \theta &= \cos(h) \cot l \quad \tan M = \frac{\sin \theta}{\cos(\theta + \delta)} \tan(h) \\ \tan \epsilon &= \tan(\theta + \delta) \cos M \\ \Delta \delta &= \rho P \cos M \cos \epsilon \\ \alpha_0 &= \alpha + \Delta \alpha \\ \delta_0 &= \delta + \Delta \delta \end{aligned} \right\} \dots (b)$$

in which M may be regarded as the parallactic angle, and ϵ the altitude of the Sun, the latter of which will be wanted to take out the diminution of the Sun's semidiameter with the table on page 175, to get

$$\sigma_o = \sigma - \text{diminution.}$$

Let now N be the North pole, M the place of the Moon at the time of contact, and m her place when in conjunction with s in right ascension. At a convenient time (t) near to this conjunction let the Moon's right ascension $= (A)$, declination $= (D)$; the Sun's right ascension $= (\alpha)$, declination $= (\delta)$, &c.; the relative hourly motion in right ascension $= A_1$ and the relative hourly motion in declination $= D_1$. Then for the time t_o of conjunction with s , and the relative declination D_o at that time, or the declination of m , we shall have

$$(\alpha_o) = (\alpha) + \Delta \alpha \quad t_o = (t) + \frac{(\alpha_o) - (A)}{A_1}$$

$$(\delta_o) = (\delta) + \Delta \delta \quad D_o = (D) + \frac{(\alpha_o) - (A)}{A_1} D_1$$

Assume $ms = D_o - (\delta_o) = h$, $Ms = \Delta$, $\angle Mms = 90^\circ + \eta$ and $\angle sMm = 90^\circ + \psi$; and

$$\tan \eta = - \frac{D_1}{A_1 \cos (D)}$$

Also, by the small triangle mMs , considered as plane,

$$\cos \psi = \frac{h \cos \eta}{\Delta}$$

and, by the spherical triangle NMs ,

$$\sin \angle MNs = - \sin \Delta \frac{\sin (\eta + \psi)}{\cos (D)}$$

or, as the small arcs may be assumed proportional to their sines,

$$\angle MNs = - \Delta \frac{\sin (\eta + \psi)}{\cos (D)}$$

The time of the Moon's passing over this angle, or the time elapsed in passing from M to m is therefore $-\frac{\Delta \sin (\eta + \psi)}{A_1 \cos (D)}$, which deducted from t_o , there results, for the instant of contact, or observation,

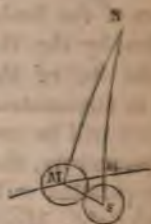
The corresponding Greenwich time $=$

$$(t) + \frac{(\alpha_o) - (A)}{A_1} + \frac{\Delta \sin (\eta + \psi)}{A_1 \cos (D)}$$

The longitude from Greenwich is hence determined by taking the difference between the Greenwich time and that of the observation, previously making them both apparent or both mean by the application of the equation of time if necessary; and it will be

$$\left. \begin{array}{l} \text{West} \\ \text{East} \end{array} \right\} \text{ when the Greenwich time is the } \left\{ \begin{array}{l} \text{greater} \\ \text{less} \end{array} \right.$$

For an Occultation of a Star by the Moon the calculation will, in some respects, be slightly abridged. The characters A_1, D_1 , must then represent the absolute motions of the Moon in right ascension and declination; the semidiameter σ , and consequently its diminution, will disappear; hence, as the altitude ϵ may be dispensed with, the equations (*a*) will perhaps be preferable to the equations (*b*) for the calculation of



the parallactic quantities $\Delta\alpha$, $\Delta\delta$; or the equations (b) by eliminating M and ϵ , may be modified into the following convenient expressions :

$$\left. \begin{aligned} \Delta\alpha &= \rho P \frac{\cos l}{\cos \delta_0} \sin h & (h) &= h - \frac{1}{2} \Delta\alpha \\ \tan \theta &= \cos (h) \cot l & \Delta\delta &= \rho P \sin l \frac{\cos (\theta + \delta)}{\cos \theta} \end{aligned} \right\} \text{--- (c)}$$

It will be useful here to recapitulate the expressions in a form suited to the facilities of arithmetical calculation, and separately arranged for an Eclipse of the Sun and an Occultation of a Star by the Moon, to preserve distinctness.

I.—ECLIPSE OF THE SUN.

1. With the longitude by account find the corresponding Greenwich time and thence from the Ephemeris take out the Sun's right ascension α , declination δ , and semidiameter σ ; the horizontal parallaxes P , π ; also, take out the Moon's declination D roughly to the minute.

Reduce the latitude by the table on page 57, and with ρ from the table on page 58 find

$$P' = \rho (P - \pi)$$

h = apparent time of observation reduced into *arc*.

$$2. \quad p = P' \cos l \sin h \quad \Delta h \text{ in minutes} = [7.92082] \frac{p}{\cos D} \quad (h) = h - \Delta h$$

$$\tan \theta = \cos (h) \cot l \quad G = \cos (h) \cos l$$

$$\tan M = \frac{\sin \theta}{\cos (\theta + \delta)} \tan (h) \quad \tan \epsilon = \tan (\theta + \delta) \cos M$$

$$B = \cos M \cos \epsilon$$

$$\text{check} \quad - \quad \frac{\sin \theta}{\cos (\theta + \delta)} = \frac{G}{B}$$

$$\Delta \delta = B \cdot P' \quad \delta_0 = \delta + \Delta \delta$$

$$\Delta \alpha \text{ in time} = [8.82391] \frac{p}{\cos \delta_0} \quad \alpha_0 = \alpha + \Delta \alpha$$

M to be in the same semicircle with h .

3. With ϵ find the corresponding factor f in the annexed table; then, using P and σ each in minutes,

$$\text{diminution of } \sigma \text{ in seconds} = \left(\frac{P'}{10} \right) \left(\frac{\sigma}{10} \right) \cdot f$$

and thence

$$\sigma_0 = \sigma - \text{diminution}$$

$$s = [9.43537] P$$

$$\text{For } \left\{ \begin{array}{l} \text{partial} \\ \text{total or annular} \end{array} \right\} \text{ phase, } \Delta = \left\{ \begin{array}{l} s + \sigma_0 \\ s - \sigma_0 \end{array} \right.$$

ϵ	Factor f for diminution of \odot 's Semid.
0°	
1°	

4. In the hourly Ephemeris of the Moon fix on a convenient time (t) at which the Moon's right ascension is near to α_0 , and for this time take out the right ascension (A) in time, the declination (D) and their hourly variations; also the Sun's right ascension (α), declination (δ), and their hourly variations. Then,

$$\begin{aligned} A_1 &= \text{hourly var. } (A) - \text{hourly var. } (\alpha) \text{ in time} \\ D_1 &= \text{hourly var. } (D) - \text{hourly var. } (\delta) \text{ in arc} \\ (\alpha_0) &= (\alpha) + \Delta \alpha \\ (\delta_0) &= (\delta) + \Delta \delta \end{aligned}$$

5.

$$\begin{aligned} m &= \frac{(\alpha_0) - (A)}{A_1} & t_0 &= (t) + m [3.55630] \\ D_0 &= (D) + m \cdot D_1 & k &= D_0 - (\delta_0) \\ n &= [1.17609] A_1 \cos (D) \\ \tan \eta &= -\frac{D_1}{n} & \cos \psi &= \frac{k \cos \eta}{\Delta} \end{aligned}$$

$$\text{Corresponding Greenwich mean time} = t_0 + [3.55630] \frac{\Delta}{n} \sin (\eta \mp \psi)$$

η to have a different sign from D_1

upper } sign when an { immersion } is observed.
under } sign when an { emersion }

II.—OCCULTATION OF A STAR BY THE MOON:

6. With the estimated longitude find the corresponding Greenwich time, and thence take out the Moon's horizontal parallax P , and her declination D roughly to the minute; also

$$\begin{aligned} \text{Sid. time} &= \text{Apparent time} + \odot \text{'s right ascension} \\ \text{or Sid. time} &= \text{Mean time} + \text{Sid. time Mean Noon from p. III. of Ephemeris} \\ &\quad + \text{accel. on Greenwich mean time} \\ h &= \text{Sid. time} - \alpha, \text{ in arc} \\ P' &= P \cos \delta \\ \alpha &\text{ being the Star's right ascension.} \end{aligned}$$

7.

$$\begin{aligned} p &= P' \cos l \sin h & \Delta h \text{ in minutes} &= [7.92082] \frac{p}{\cos D} & (h) &= h - \Delta h \\ \kappa &= P' \sin l \cos \delta & \kappa' &= P' \cos l \sin \delta \cos (h) & \delta_0 &= \delta + \kappa - \kappa' \\ \Delta \alpha \text{ in time} &= [8.82391] \frac{p}{\cos \delta_0} & \alpha_0 &= \alpha + \Delta \alpha \end{aligned}$$

8. In the hourly Ephemeris of the Moon fix on a convenient time (t) at which the Moon's right ascension is near to α_0 , and for this time take out the right ascension (A),

the declination (D), and their hourly variations A_1, D_1 . Then,

$$\begin{aligned} m &= \frac{\alpha_0 - (A)}{A_1} & t_0 &= (t) + [3.55630] m \\ D_0 &= (D) + m \cdot D_1 & k &= D_0 - \delta_0 \\ n &= [1.17609] A_1 \cos (D) \\ \tan \eta &= -\frac{D_1}{n} & \cos \psi &= [0.56463] \frac{k \cos \eta}{P} \\ \text{Corresponding Greenwich mean time} &= t_0 + [2.99167] \frac{P}{n} \sin (\eta \mp \psi) \end{aligned}$$

PRACTICAL RULES FOR CALCULATING THE LONGITUDE FROM AN OBSERVED OCCULTATION.

With the estimated longitude find the corresponding Greenwich time roughly to the minute, and for this time take out from the Ephemeris the Moon's declination roughly to the minute, her horizontal parallax to the tenth of a second, and the Sun's right ascension in time to the nearest second. To the Sun's right ascension add the apparent time of the observation which will give the right ascension of the meridian. The difference between this right ascension and that of the star will give the hour-angle of the star in time, which must be reduced into arc in the usual manner; it will be,

$$\left. \begin{array}{l} \text{W.} \\ \text{E.} \end{array} \right\} \text{ when R.A. of meridian is } \left\{ \begin{array}{l} \text{greater} \\ \text{less} \end{array} \right\} \text{ than R.A. of } *.$$

Reduce the latitude of the place by subtracting the correction found in the table on page 57, (Appendix to Nautical Almanac, 1836), for which the nearest correction found in the table will be sufficient.

To the proportional logarithm of the Moon's horizontal parallax, add the correction answering to the latitude in the following series:

Lat. -	0°	11°	19°	24°	29°	34°	38°	42°	46°	50°	54°	59°	64°	69°	77°	90°
Corr. -	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	

To the proportional logarithm of the horizontal parallax, so corrected, add the log. secant of the reduced latitude and the log. cosecant of the hour-angle. To the sum (S,) add the log. cosine of the Moon's declination and the constant log. 0.3010. The result will be the prop. log. of an arc, which subtracted from the hour-angle will be the hour-angle corrected.

To the corrected prop. log. of the horizontal parallax, add the *'s declination and the log. cosecant of the reduced latitude. To the log. cosecant of the *'s declination the log. secant of the hour-angle corrected. These sums will be arcs.

The former arc to have the same name as the latitude.
The latter to have

a different name from } the declination when the hour-angle is { less } than 90° .
 the same name as }

The sum of these two arcs, having regard to their names, will give the correction to be applied to the *'s declination to get the declination corrected.

To the sum (S_1) add the constant log. 1.1761 and the log. cosine of the *'s declination corrected; the sum will be the prop. log. of an arc in time, to be

added to }
 subtracted from } the *'s right ascension, when it is { West } of the meridian,
 { East }

to get the *'s right ascension corrected.

In the hourly ephemeris of the Moon, fix on a convenient time at which her right ascension is near to that of the star corrected; and, for this time, take out the right ascension, the declination, and their hourly variations.

Subtract the common log. of the difference between the corrected right ascension of the star and the right ascension of the Moon from the common log. of the hourly motion in right ascension; to the remainder add the constant log. 0.4771; to the same remainder add the prop. log. of the hourly motion in declination. The former sum will be the prop. log. of a time to be

added to }
 subtracted from } the assumed time when *'s R.A. is { greater } than \mathcal{D} 's R.A.
 { less }

to get the time corrected;

The latter will be the prop. log. of a correction of the \mathcal{D} 's declination, to be applied with

the same name as }
 a different name from } hourly var. when *'s R.A. is { greater } than \mathcal{D} 's R.A.
 { less }

To the common log. of the hourly motion in right ascension, add the log. cosine of the \mathcal{D} 's corrected declination; and to the sum (S_2) add the prop. log. of the hourly motion in declination and the constant log. 7.1427. The result will be the log cotangent of the 1st orbital inclination * and must take

the same name as }
 a different name from } hourly motion in dec. when * is { North } of \mathcal{D} .
 { South }

To the prop. log. of the difference between the star's declination corrected and the Moon's declination corrected add the constant log. 9.4354 and the log. secant of the preceding orbital inclination; and from the sum deduct the prop. log. of the horizontal parallax. The remainder will be the log. secant of the 2nd orbital inclination† which must have the name

S. }
 N. } when the observation is an { immersion
 { emersion

Add together the two orbital inclinations, having proper regard to their names; and to the log. cosecant of this sum add the preceding sum (S_2), the prop. log. of the horizontal parallax and the constant log. 8.1844. The sum will be the prop. log. of a correction to be applied to the time corrected to get the mean time at Greenwich; it must be

added }
 subtracted } when the sum of the orbital inclinations is { N.
 { S.

* With the parallel of declination.

† With the Moon's limb.

By applying the equation of time from p. II. of the ephemeris there will result the Greenwich apparent time, and the difference between it and the apparent time of observation will show the longitude of the place from Greenwich; it will be

W. } when the Greenwich time is { greater }
E. } { less } than the observed.

EXAMPLES.

I.—SOLAR ECLIPSE.

For a Solar Eclipse take the example directly calculated in the Appendix to 1836, page 139:—

Suppose the beginning of the Solar Eclipse on May 15, 1836, to be observed to take place at 1^h 36^m 35^s·6 P.M., apparent time, in latitude 55° 57' 20" N., and longitude about 12^m W.

Here we have

Observed apparent time	1 ^h 36 ^m 35 ^s ·6	
Longitude	12 ^m 0	$h = + 1^h 36^m 35^s \cdot 6$
Greenwich apparent time	1 ^h 48 ^m 35 ^s ·6	$= + 24^o 8' 9''$
Equation of time	3 ^m 9	
Greenwich mean time	1 ^h 44 ^m 7 ^s	

We hence take from the Ephemeris, $\alpha = 3^h 29^m 19^s$, $\delta = + 18^o 57' 6''$, $\sigma = 15' 49'' 9$, $D = + 19^o 19'$, $P = 54' 24'' 4$, $\pi = 8'' 5$, $P - \pi = 54' 15'' 9$.

Latitude + 55° 57' 20"

Reduction 10 28

$l = + 55^o 46' 52'' - - - \rho = 9^{\circ} 99902$

$P - \pi = 3^{\circ} 51267$ $\cos(h) + 9^{\circ} 96060 - - + 9^{\circ} 96060$

$\rho = 9^{\circ} 99902$ $\cot l = + 9^{\circ} 83256$ $\cos l + 9^{\circ} 75001$

$P' = 3^{\circ} 51169$ $\theta + 31^{\circ} 50' 7'' \tan \theta = + 9^{\circ} 79316$ $G = + 9^{\circ} 71061$

$\cos l = 9^{\circ} 75001$ $\delta + 18^{\circ} 57' 6'' \sin \theta = + 9^{\circ} 72231$

$\sin h + 9^{\circ} 61183$ $\theta + \delta + 50^{\circ} 48' 3'' \cos = + 9^{\circ} 80069$ $B = + 9^{\circ} 78899$

$p = + 2^{\circ} 87353$ (1) $+ 9^{\circ} 92162$ check $+ 9^{\circ} 92162$

$\cos D = 9^{\circ} 97484$ $\tan(h) + 9^{\circ} 64936$

$+ 2^{\circ} 89869$ $\tan M + 9^{\circ} 57098$

$h + 24^{\circ} 8' 9''$ const. $7^{\circ} 92082$ $\cos M + 9^{\circ} 97180 - - + 9^{\circ} 97180$

$\Delta h + 6' 6'' - - + 0^{\circ} 81951$ $\tan(\theta + \delta) + 0^{\circ} 08861$ $\cos \epsilon + 9^{\circ} 81719$

$(h) + 24^{\circ} 2' 3''$ $\epsilon + 48^{\circ} 58' 3'' \tan \epsilon = + 0^{\circ} 0$ $R = + 9^{\circ} 78899$

$\delta + 18^{\circ} 57' 6''$

$+ 33' 3'' - - - - - \Delta \delta = +$

$\delta_0 + 19^{\circ} 30' 9'' \cos = 9^{\circ} 97430$ (2) $\sigma = -$

$+ 2^{\circ} 89923$ (1) - (2) $\dim. =$

const. $8^{\circ} 82391$ $\sigma_0 = -$

$\log. = + 1^{\circ} 72314$ $s = -$

$\Delta \alpha + 0^h 0^m 52^s \cdot 86$ $\Delta = -$

$\alpha = 3^h 29^m 19^s$

$\alpha_0 = 3^h 30^m 12^s$

By inspecting the hourly ephemeris of the Moon's right ascension on May with $\alpha_0 = 3^h 30^m 12^s$, the most eligible time to assume is evidently $(t) = 3^h 0^m 0$ this time we have $(A) = 3^h 30^m 42^s.84$, $(A_1) = 2^m 0^s.68$, $(D) = + 19^\circ 31' 3$ $(D_1) = + 9' 55''.2$, $(\alpha) = 3^h 29^m 31^s.57$, $(\alpha_1) = + 9^s.89$, $(\delta) = + 18^\circ 58' 2$ $(\delta_1) = + 34''.8$: with these we proceed as follows:

$(A_1) - - - 2^m 0^s.68$	$(D_1) - - + 9' 55''.2$
$(\alpha_1) - - - 9^s.89$	$(\delta_1) - - + 34''.8$
$A_1 - - - 1^m 50^s.79$	$D_1 - - + 9' 20''.4$
$(\alpha) - - - 3^h 29^m 31^s.57$	$(\delta) + 18^\circ 58' 21''.4$
$\Delta \alpha + 0^h 0^m 52^s.86$	$\Delta \delta + 33' 18''.4$
$(\alpha_0) - - - 3^h 30^m 24^s.43$	$(\delta_0) + 19^\circ 31' 39''.8$
$(A) - - - 3^h 30^m 42^s.84$	
$\{ (\alpha_0) - (A) - - - 0^h 0^m 18^s.41$	
$\{ \log. - - - - 1^m 26^s.505$	
$A_1 - - - 2^m 04^s.50$	$D_1 - - + 2^m 74^s.50 (1)$
$m - - - 9^m 22^s.55$	$- - - 9^m 22^s.55$
$\text{const.} - - - 3^m 55^s.30$	$\{ \log - - - 1^m 96^s.905$
$\{ \log - - - 2^m 77^s.685$	$\{ - 0^\circ 1' 33''.1$
$\{ - 0^h 9^m 58^s.2$	$(D) + 19^\circ 31' 34''.0$
$(t) 3^h 0^m 0^s$	$D_0 + 19^\circ 30' 0''.9$
$t_0 + 2^h 50^m 1^s.8$	$(\delta_0) + 19^\circ 31' 39''.8$
	$k - 1^\circ 38'.9$
	$\cos (D) - - 9.97428$
	$A_1 - - 2.04450$
	$\text{const.} - - 1.17609$
	$n - - 3.19487 (2)$
$\eta - - - 19^\circ 41'.2$	$\tan \eta - - 9.55363 (1) - (2)$
	$\cos \eta - - + 9.97384$
	$k - - 1.99520$
	$- 1.96904$
	$\Delta - - 3.26196$
$\psi - - + 92^\circ 55'.2$	$\cos \psi - - 8.70708$
$\eta - \psi - - 112^\circ 36'.4$	$\sin - - 9.96528$
	$\Delta - - 3.26196$
	$\text{const.} - - 3.55630$
	$- 6.78354 (3)$
$\text{corr.} - 1^h 4^m 38^s.5$	$- 3.58867 (3) - (2)$
$t_0 + \text{corr.} + 1^h 45^m 23^s.3$	Greenwich mean time
$3^h 56^m 0^s$	Equation of time
$1^h 49^m 19^s.3$	Greenwich apparent time
$1^h 36^m 35^s.6$	Observed
Longitude - - - 12^\circ 43'.7	W. of Greenwich.

Suppose, at Bedford, on January 7, 1836, in latitude $52^{\circ} 8' 28''$ N., the Immersion of γ Leonis to be observed at $10^{\text{h}} 39^{\text{m}} 22^{\text{s}} \cdot 4$ P.M., apparent time, and the estimated longitude to be about $0^{\text{h}} 1^{\text{m}}$ W. Required the longitude?

Apparent time (observation) -	10 39 ^{h m}	Latitude N. 52° 8' 28"
Longitude - - - - -	0 1 W.	Reduc. - - - 10 57
Apparent time (Greenwich) -	10 40	N. 51 57 31
Equation of time - - - - -	7	Reduced or geocentric latitude.
Mean time (Greenwich) - - -	10 47	

☉'s R. A.	- - - - -	19 ^h 12 ^m 40 ^s	P. L. ☉'s hor. par.	- - - - -	0° 5068	
App. time	- - - - -	10 39 22	corr. for lat.	- - - - -	9	
R. A. meridian	- - - - -	5 52 2	P. L. corr ^d . hor. par.	- - - - -	0° 5077	
— * - - - -	- - - - -	10 23 26	sec. red. lat.	- - - - -	0° 2103	
* 's hour angle E.	{	in time -	4 31 24	cosec. hour angle	- - - - -	0° 0333
		in arc -	67° 51'	sum (S ₁)	- - - - -	0° 7513
				cos. ☉'s dec.	- - - - -	9° 9832
				const. log.	- - - - -	0° 3010
		corr ⁿ . - -	17 - - -	P. L. corr ⁿ .	- - - - -	1° 0355
* 's hour angle E. corr ^d .	- -	67 34				

P. L. corr ^d hor. par.	-	0	5077	-	-	-	-	0	5077
sec. *'s dec.	-	-	0	0150	-	-	cosec.	-	0 5876
cosec. red. lat.	-	-	0	1037	-	-	sec.	-	0 2103
N. 0 42 33	0	P.L.	0	6264	-	-	sec. corr ^d , hour angle	0	4184
S. 0 3 23	9	-	-	-	-	-	P. L.	-	1 7240
corr ⁿ .	-	N. 0 39 9	1	-	-	-	sum (S ₁)	-	0 7513
*'s dec.	-	N.14 58 38	8	-	-	-	const. log.	-	1 1761
*'s dec. corr ^d .	N.15 37 47	9	-	-	-	-	cos.	-	9 9836
corr ⁿ .	-	-	0 ^b 2 ^m 12	56	-	-	P.L. corr ⁿ .	-	1 9110
*'s R. A.	-	10 23 26	39	-	-	-			
*'s R. A. corr ^d .	10 21 13	83	-	-	-	-			

$\text{D's R. A.} = 10^{\text{h}} 20^{\text{m}} 58^{\text{s}}.47$, hourly motion
 $\text{N. } 15^{\circ} 47' 11''.0$, hourly motion $\text{D's dec.} = \text{S.}$

diminishing the semi-diameter, a contact will similarly be established with the true limb of the Moon; and this principle, in its application to solar eclipses, presents an advantage similar to that derived in the case of an occultation, by considering the Star as an apparent place. (See *Appendix to Nautical Almanac for 1850*, page 123*.)

The formulae, Nos. 2, 3, 4, and 5, pages 130 and 131 may, according to this method, be supplied by the following :

2.	$P' = P(P - r)$ $Q_1 = [9.4150]$ $s = [9.43337] P$	$m = P' \cos l$ $Q_2 = [9.4150] m \sin \delta$
3.	$k = \frac{m}{\cos D}$ $\Delta k \text{ in minutes} = [7.92082] k \sin h$ $(h) = h - \Delta k$ $\tan \theta = \cos (h) \cot l$ $\tan M = \frac{\sin \theta}{\cos (\theta + \delta)} \tan (h)$ $B = \cos M \cos \epsilon$ $\text{check} - - \frac{\sin \theta}{\cos (\theta + \delta)} = \frac{G}{B}$ $\Delta \delta = B. P'$ $\sigma_0 = \sigma - \text{diminution for } \epsilon$ $\text{For } \left\{ \begin{array}{l} \text{partial} \\ \text{total or annular} \end{array} \right\} \text{ phase, } \Delta' = \left\{ \begin{array}{l} s + \sigma_0 \\ s - \sigma_0 \end{array} \right.$	$G = \cos (h) \cos l$ $\tan \epsilon = \tan (\theta + \delta) \cos M$
4.	$k_0 = \frac{m}{\cos \delta_0}$ $\Delta \alpha_1 = Q_1 k_0 \cos h$	$\Delta \alpha = k_0 \sin h$ $\Delta \delta_1 = Q_2 \sin (h)$
5.	$\delta_0 = \delta + \Delta \delta$ $y = (\alpha - \Delta \alpha) \cos D$ $x = (D + \alpha' \text{ corr.}) - \delta_0$	$\alpha' = \alpha - \Delta \alpha$ $y_1 = (\alpha_1 - \Delta \alpha_1) \cos D$ $x_1 = D_1 - \Delta \delta_1$

* This was inadvertently ascribed to Carlini; Professor Henderson, by w appeared upon this very point, in the *Quarterly Journal* for 1824, page 411, & method has been long in practice, and that it was employed at an early period by



1. The first part of the document is a list of names and addresses, which are arranged in a columnar format. The names are written in a cursive script, and the addresses are written in a more formal, printed style. The list appears to be a directory or a roster of some kind.

2. The second part of the document is a series of short, handwritten notes or entries. These are written in a cursive script and are arranged in a columnar format, similar to the first part. The notes are brief and appear to be related to the names and addresses listed above.

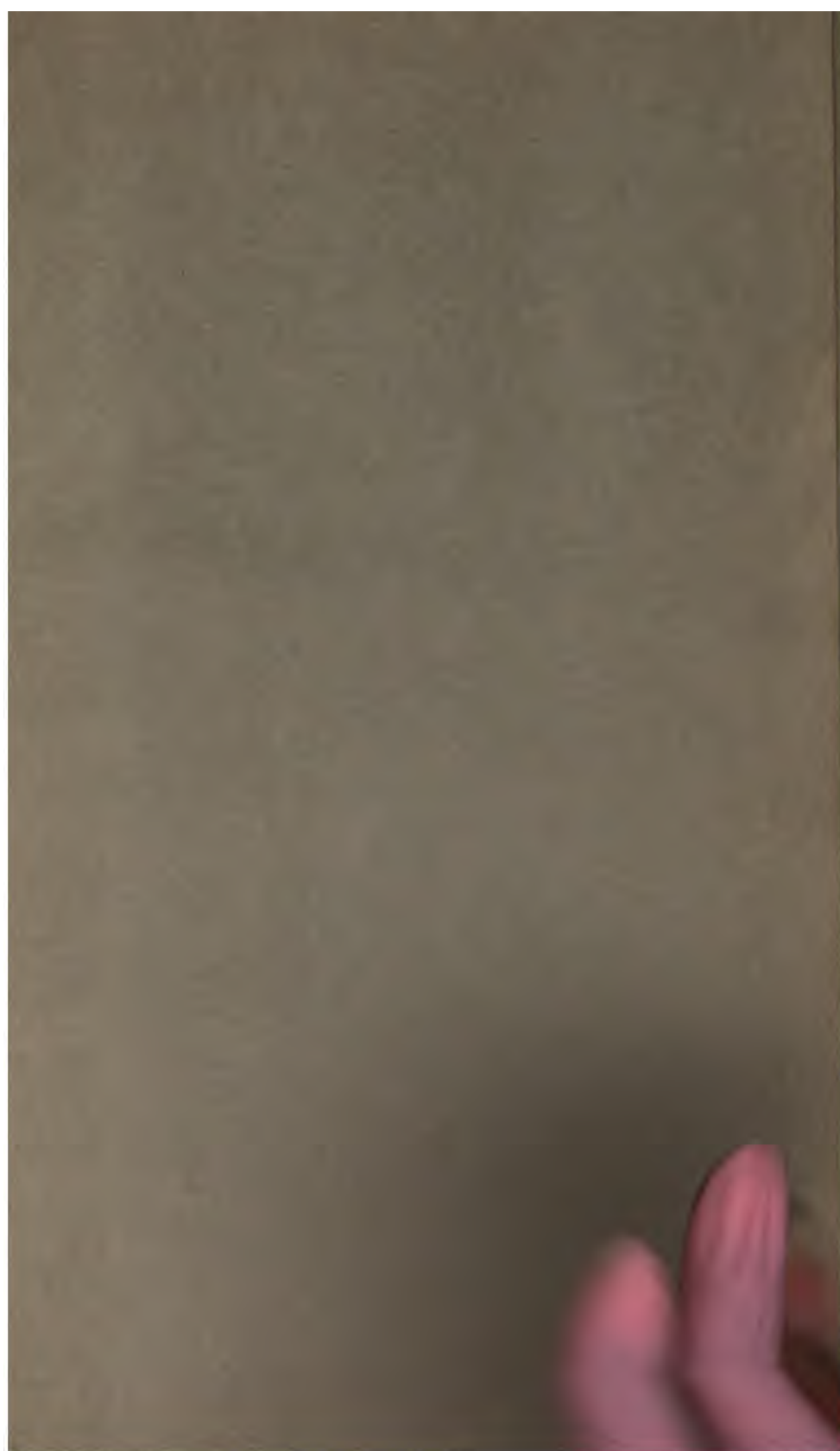
3. The third part of the document is a series of short, handwritten notes or entries. These are written in a cursive script and are arranged in a columnar format, similar to the second part. The notes are brief and appear to be related to the names and addresses listed above.

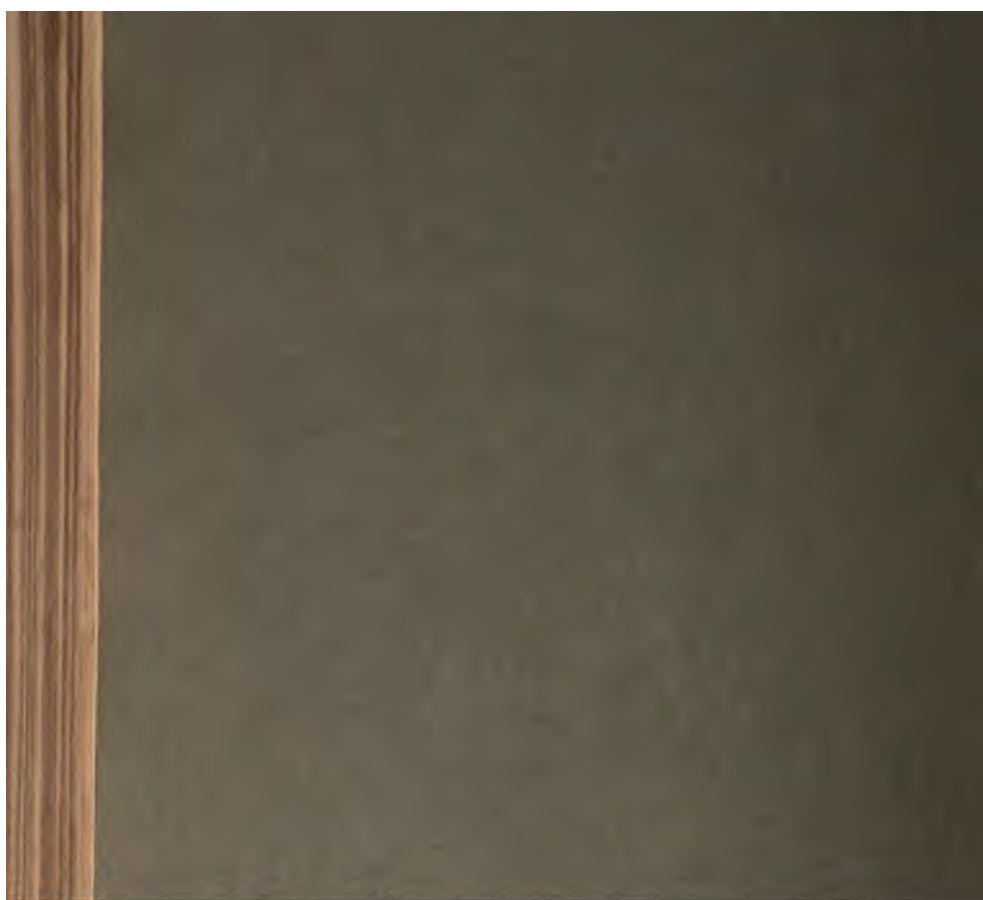
4. The fourth part of the document is a series of short, handwritten notes or entries. These are written in a cursive script and are arranged in a columnar format, similar to the third part. The notes are brief and appear to be related to the names and addresses listed above.

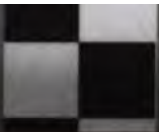
5. The fifth part of the document is a series of short, handwritten notes or entries. These are written in a cursive script and are arranged in a columnar format, similar to the fourth part. The notes are brief and appear to be related to the names and addresses listed above.

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